A DESIGN APPROACH FOR PERSONALIZING AND IMPROVING THE

APPEARANCE OF SPECIALTY SHOES

Zakilya Ayofemi Cooper

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Signature of Author

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Date of Graduation

THESIS ABSTRACT

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Zakilya A. Cooper

Master of Industrial Design, December 15, 2006
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106 Typed Pages

Directed by Sang-Gyeun Ahn

The essential purpose of this thesis is the aesthetic improvement of the current state of specialty shoes. The importance of creating a new design option is especially crucial for the fashion-conscious consumers affected by the problems that require specialty shoes. Special attention to design options for specialty shoes is substantial for these individuals that care more about design aesthetics because they don't want to be ostracized by their peers because of their affliction. These psychological effects are the most important reason for a better design option for specialty shoes.

ACKNOWLEDGEMENTS

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Style Manual used: American Psychological Association

Computer software used: Microsoft Word
Adobe Illustrator
Adobe Photoshop
Rhinoceros

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CHAPTER 1: INTRODUCTION

1.1 PROBLEM STATEMENT

Orthopedic shoes are not as fashionable as other shoes and this prevents consumers from expressing themselves in their own way. When a person is comfortable with themselves as far as fashion goes, they display a sense of confidence. Fashion and the way others view us is important to most people. Professor Susan B. Kaiser states, “An individual’s concept of self is derived, maintained, and modified through social interactions with others” (Kaiser, 1985, p.93).

Throughout history orthopedic shoes were designed only to meet the consumers’ medical needs and if the aesthetics were addressed at all, they were thought of last.

“The footwear industries main focus for such a niche category is to produce a shoe that is functionally comfortable, therefore, not putting much emphasis on aesthetic design, as a result consumers of specialty shoes were used to the unattractive designs and didn’t expect a change” (“Fitting”,2002).

If an individual is able to express themselves through fashion, this can build self-esteem and help the individual feel confident.

“Consumers want a shoe that functions like an orthopedic shoe but doesn’t look like the traditional orthopedic shoe. There’s no reason why most foot conditions

can’t be serviced by a shoe that functions and is also current (style wise), “said Jerry Regosin, president and chief operating of Drew Shoe, Lancaster, Ohio”(“Fitting”, 2002).

1.2 NEED FOR STUDY

There is a limited variety of fashion alternatives for individuals with severe problematic feet. Design of orthopedic shoes or shoes that require foot orthotics is focused on performance and customizing physical needs but not fashion elements. As a result of inadequate aesthetic options for fashion, the patient is unable to show a sense of fashion, express their individuality, and may not be as comfortable with his/her social appearance.

Personalization is an important factor to consider in designing orthopedic shoes or shoes that require foot orthotic devices.

“Since clothing is an extension of one’s body and a reflection of one’s self image, the type of clothing worn probably evokes some feelings from the inner self. These feelings probably influence one’s self concept and, in turn, one’s behavior” (Kaiser, 1985, p.80).

This thesis focuses on the research of the current style of the specialty shoes and their aesthetic improvement.

The target user group addressed is consumers of specialty shoes; the patients, however, vary not only by height, weight, age, sex, and in the exact nature of their physical deformities, but also in their personality traits, vocation, and lifestyle.

1.3 OBJECTIVES FOR STUDY

This thesis presents a few of suggestions for improving the style options for orthopedic shoes and shoes that require foot orthotics. As an exploratory study, the goals established for the design effort are as follows:

- Study all areas needed to understand orthopedics, the anatomy and function of the foot, the importance of fashion and self expression and the importance of color.
- Conduct a survey to evaluate how and what everyday people look for when identifying what they feel is fashionable or stylish.
- Create documentation that will establish one of many methods for a different approach of improving the style options for those that wear specialty shoes.
- Applying new-found data to construct a conceptual model to show the new design approach.

1.4 DEFINITION OF TERMS

The following are medical terms used to describe the parts of the foot and are used in the explanation of the anatomy of the foot and throughout this research.

Arch

An organ or structure having a curved or bowlike appearance, especially either of two arched sections of the bony structure of the foot.

Calcaneus

The quadrangular bone at the back of the tarsus, the largest of the tarsal bones, also called heel bone.

Cuboids

A tarsal bone on the outer side of the foot in front of the calcaneus and behind the fourth and fifth metatarsal bones.

Cuneiform

A wedge-shaped bone, especially one of three such bones in the tarsus of the foot.

Fibula

The outer, narrower, and smaller of the two bones of the human lower leg, extending from the knee to the ankle, and articulating with the tibia above and the tibia and talus below, also called calf bone.

Metatarsals

Any of the five long bones that form the anterior portion of the foot and articulate posteriorly with the three cuneiform and the cuboid bones and interiorly with the five proximal phalanges.

Navicular

A concave bone of the human foot, located between the talus and the metatarsals.

Phalanges

A bone of a finger or toe, also called phalange.

Talus

The bone of the ankle that articulates with the tibia and fibula to form the ankle joint, also called anklebone, astragalus.

Tarsus

The area of articulation between the foot and the leg, comprising the seven bones of the instep: the talus, calcaneus, navicular, three cuneiform and cuboid bones.

Tibia

The inner and larger of the two bones of the lower leg, extending from the knee to the ankle, and articulating with the femur, fibula, and talus, also called shinbone.

Valgus

Characterized by an abnormal outward turning of a bone, especially of the hip, knee, or foot; occasionally used to indicate an inward turning.

Varus

Characterized by an abnormal inward turning of a bone, especially of the hip, knee, or foot; occasionally used to indicate an outward turning.

Thomas Heel

A medically designed heel for optimal correction.

Orthotics

The science that deals with the use of specialized mechanical devices to support or supplement weakened or abnormal joints or limbs.

Orthopedic

The branch of medicine that deals with the prevention or correction of injuries or disorders of the skeletal system and associated muscles, joints, and ligaments.

1.5 LITERATURE REVIEW

1.5.1 Overview

The review of literature examined issues associated with and relevant to understanding the current state of specialty shoes. Understanding the role of orthopedic shoes, features of orthopedic, the definition of orthotics, current market, self image and clothing, and defining fashion will help place the research into perspective.

1.5.2 Role of Orthopedic Shoes

An orthopedic shoe is modified to incorporate features designed to replace the missing portions of feet, relieve pressure, shift weight, or permit desired movement of the ankle. The shoes enhance the balance, mobility, and appearance of the patients.

The Ideal Orthopedic Shoe (www.footsmart.com)

Orthopedic shoes should have the following characteristics:

- A firm heel counter
- A wide enough toe box to accommodate toes without pinching them
- A semi-rigid or rigid shank
- A removable inner sole
- A long vamp
- A heel measuring between ¾ - 1½ inches

Other features to consider in good orthopedic shoes include:

- A padded collar and tongue to protect sensitive areas, reduce irritation and secure the fit
- A rubber outsole to aid with slip resistance

- Interchangeable removable insoles to aid with perspiration problems and accommodate any orthotic devices
- Orthopedic shoes with Velcro® to provide good closure
- A plastizote foam lining that molds to the foot to reduce pressure points and provide customized comfort and protection
- A firm compression EVA mid-sole
- A flared outsole to enhance foot stability
- A polyurethane rocker sole to reduce ball-of-foot pain and absorb shock
- Breathable leather upper

1.5.3 Definition of Orthotics and the Indications for Use

Hunter et al. (1995) states the definition of orthotic devices:

> We define a foot orthotic as a device that is placed in a person's shoe to reduce or eliminate pathological stresses to the foot or other portions of the lower kinetic chain. These stresses include structural and positional deformities, lack of shock absorption, and excessive shearing forces. *Stedman's Medical Dictionary* defines orthosis as the correction of maladjustments. It defines orthotics as the science that deals with the making and fitting of orthopedic appliances. Jahss (1991) states that an orthotic is "a mechanical device made for the foot or toes that is used to either stabilize the foot or hold it in an optimal position, increase function, limit motion of a painful joint, decrease weight bearing on painful areas, or protect the foot or toes from pressure or excess friction against each other or the shoe". (p.1-2)

Hunter et al. (1995) indicates the use of orthotic devices:

> Orthotic devices are indicated in a variety of orthopedic injuries commonly encountered in physical therapy and athletic training. The indications for foot orthotics include but are not limited to structural and positional imbalances of the foot, lack of shock absorption, pressure-sensitive areas, shearing forces, and unique orthopedic and sport injuries. The decision to use an orthotic device must be on a complete history, biomechanical examination, and the individual needs of the patient or athlete. (p.1-2)

1.5.4 Current Market/ Comparative Product Chart[1]

The use of this chart will allow the designer to compare and evaluate the current products that are on the market. These products are separated by brand, price, and product information. Each feature shown could inspire a design improvement or new concept. This chart shows a few brands and products that are currently on the market.

Brands	Product	Prices	Information
Hush Puppies		$60	Get dressed – comfortably, in these shoe featuring HPO2® Flex technology that "cushions your feet on a bed of air." Soft full grain leather upper and a dual density foam footbed with a contoured arch will keep you on your feet and see you through your day. A breathable and antibacterial PU lining enhances the comfort. Imported.
Kumfs		$154.00	Stylish black Mary Janes with a round toe design. Poron memory cushioning bounces back with every step. Polyurethane soles are light, flexible, slip resistant, hardwearing, and stable. Genuine leather uppers and leather sock lining.
Birkenstock		$109.95	Three adjustable buckles strap you in for the perfect fit on a contoured and flexible cork/latex footbed that urges your feet into a healthy walking position. The warmth of your feet causes the cork later to gently yield to the individual shape of each foot, and the shock-absorbing EVA sole cushions every step you take.
Drew		$219	Easy-on, easy-off Velcro® closures make Deerpro ideal for anyone with limited hand mobility. Soft leather uppers and deerskin linings protect the sensitive or hyposensitive foot. Double the added depth of our typical shoe provides added room for extra-thick orthotics or extreme foot conditions. A quality welt construction provides added durability and more support. Padded tongue and collar.
Finn Comfort		$284.95	This sleek, stylish Oxford is anatomically contoured. The footbed provides sound orthopedic support. The all-natural cork/latex footbed is removable and hand-washable. Adapts to the foot for a customized fit. Ultra-high quality materials and components as well as a polyurethane and rubber outsole. They are handcrafted in Germany.

Table 1 Comparative Product Chart: Orthopedic Shoe

[1] From www.footsmart.com/product ,Copyright 2006 FootSmart.com

1.5.5 Psychological Aspects of Clothing

The way that our peers view us is important to many, and the current appearance of specialty shoes separates individuals that have to wear them. The therapeutic look points out that they have a physical problem, because the current design of orthopedic shoes are aesthetically unattractive, this may affect how one socially fits in with their peers.

"A person's sense of self, or self-concept, involves a inclusive conception of who he or she is…Because clothing and personal appearance are important factors in the impressions formed by others about us, these aspects of appearance indirectly influence our conceptions of self" (Kaiser, 1985, p.92).

1.5.6 Defining Fashion

Understanding fashion is essential when considering personalization for specialty shoes, because fashion is personal and allows one to express ones personality and creativity.

Newman (2001) defines fashion:

> According to "Webster's *Third* Edition, Fashion is the "prevailing or accepted style or group of styles in dress or personal decoration established or adopted during particular time or season .Fashion reflects our society and our culture; as a symbolic innovation, it reflects how people define themselves. In semiotic terms (how we interpret the meanings of symbols), the meaning of fashion products often is under coded, that is, there is no one precise meaning,

but rather plenty of room for interpretation among perceivers. The term "fashion" is technically correct only when a choice is accepted by the majority of a group. To show the relative position of different items on the scale of group acceptance, fashion is thought of as having a life cycle or wavelike motion. (p.29)

1.5.7 Summary

The issues relevant to improving the design options for consumers of specialty shoes such as understanding the role and the need for orthopedic shoes, the definition of orthotics, current market situation product comparison, psychological aspects of clothing, and defining fashion have been documented. The review of literature supports the need for and gives direction for an investigation into aesthetic improvement options for specialty shoes.

CHAPTER 2: DESIGNING FOR THE INCAPACITATED

2.1 FOOT ANATOMY

It is important to have some knowledge and understand the anatomy of the foot and how the foot functions to design a shoe.

Scholl (1946) states the following:

> The bones of the foot are divided into three sections known a Tarsus, Metatarsus, and Phalanges. The tarsus group of bones consists of the Os Calcis, Astragalus, Scaphio, Internal Cuneiform, Middle Cuneiform, External Cuneiform and Cuboids, or a total of seven bones. The Metatarsus consists of five metatarsal bones; these bones form the instep and forward or anterior end together with the bones of the toes form the ball of the foot and Anterior Metatarsal Arch. The Phalanges, or the bones of the toes, consist of fourteen bones. There are three bones in each toe except the great toe, which has only two. The largest bone in the foot is the Os Calcis or heel bone. It is to this bone that the big, heavy tendon Achilles is attached. This tendon is a continuation of the muscles of the calf of the leg which act as a lift or leverage in raising the process of walking.

The entire weight of the body is carried onto the foot and is suspended by the high point of the arch. The foot is constructed for the purpose of taking the weight of the body, carrying it and doing so comfortably. There is a reason for there being so many bones in the foot. It is to give numerous joints or articulations which permit various movements and in that way supply flexibility in walking, running, jumping, and dancing. (pgs. 10-12)

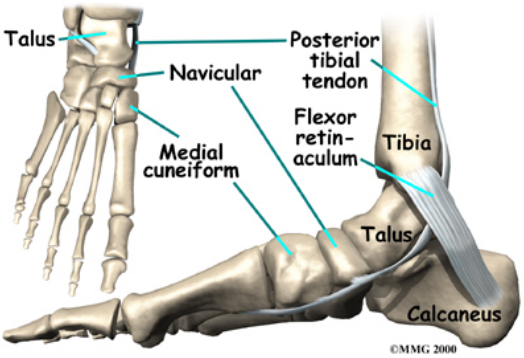


Figure 1 Foot Anatomy

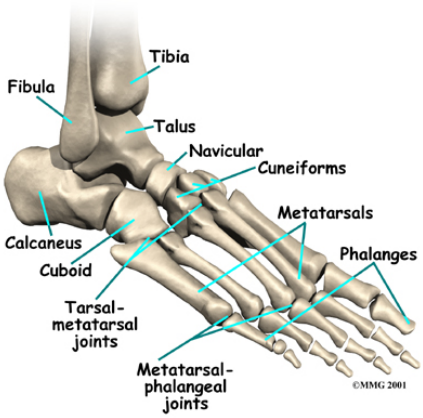


Figure 2 Foot Anatomy

2.2 COMMON FOOT PROBLEMS:[2]

While designing a specialty shoe with fashion in mind the function of the foot and common foot problems should be researched to get an understanding of what consumers needs are. Some injuries are inheritable, accidental, or some are caused by poorly fitted shoes.

"Overall, about 59 million in the USA have foot problems, says the National Center for Health Statistics. An independent survey of 1,000 adults done for the

[2] pages 11-14, From www.drewshoe.com ,Copyright 2006 Drew Shoe Corporation

APMA says 76% of Americans have had foot problems in the past year. Forty-two percent of men and 39% of women think having pain is "normal" (Peterson, n.d.).

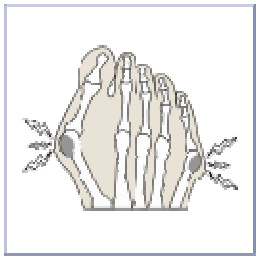


Figure 3 Bunion

Bunion: A large unsightly bony bump around the big toe joint is called a bunion. The main cause of a bunion is congenital. Shoes may have very little to do with the formation of a bunion, but can be an aggravating factor. When the big toe joint is deviated with a bunion deformity, the body weight transmission is not as effective.

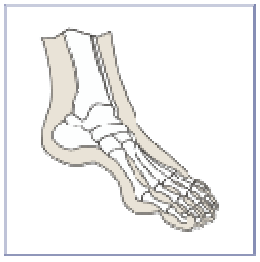


Figure 4 High Arch

High Arch: High arch, or pes cavus, is an excessively elevated toe-to-heel arch of the foot. Highly arched feet are much less common than flat feet and more likely to be associated with an abnormal orthopedic or neurological condition. Neuromuscular diseases that cause changes in muscle tone may be associated with the development of high arches.

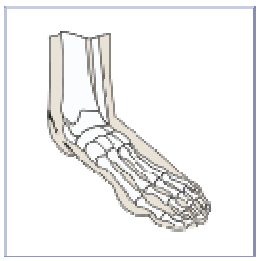


Figure 5 Flatfoot

Flatfoot: A foot in which the arch of the instep is flattened so that the entire sole of the foot rests upon the ground; also, the deformity, usually congential, exhibited by such a foot; splayfoot. Causes of flatfeet could be congenital, neuromuscular diseases, injury to the foot, ruptured tendon, tight Achilles tendon, arthritis or a small bony bridge between the bones in the foot.

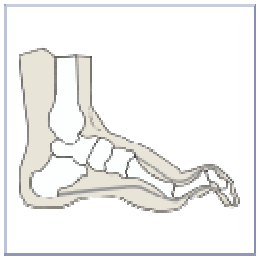


Figure 6 Hammer Toe

Hammer toe: A deformity of the toe in which the toe is bent downward like a claw. A hammer toe occurs when the middle of the toe points upwards abnormally. This most often occurs in the second toe, and is often the result of a big toe bunion pushing on the second toe.

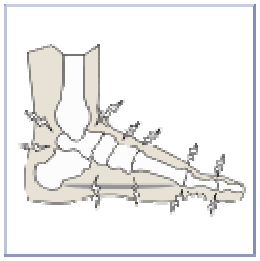


Figure 7 Arthritis

Arthritis: Arthritis is not one disease, but over 100 known diseases that affect the bones, muscles and joints. The term does not designate a specific disease, but signifies inflammation of a joint resulting from any cause. Pain and swelling can ensue (particularly in the hands and feet), which creates limited movement and mobility.


Figure 8 Diabetes

Diabetes: Diabetes is a syndrome in which the basic defect is an absence or shortage of the pancreatic hormone insulin. This deficiency disrupts the vascular system, affecting the eyes, kidneys, legs, and other extremities such as the feet. Diabetic foot problems arise from poor circulation that causes hyposensitivity (lack of feeling). Clinical studies have shown that footwear and doctor prescribed orthotics play an important role in diabetic foot care.

2.3 CLINICAL FOOT EXAMINATION

Once a patient has complaints of foot problems a clinical examination should be conducted to give a correct diagnosis to discover the problem and assign the necessary specialty shoes.

“A clinical examination is given to determine the correct diagnosis for foot orthotics or orthopedic shoes. Clinical examinations must evaluate any or all the tissue sites that may be the site and source of pain as well as the site and source of

impairment. Every joint must be specifically evaluated, as must every tendon, ligament, nerve, and blood vessel" (Cailliet, 1997, p.69-71).

Cailliet (1997) explains the examination process:

> **1. The Examination of the Foot:** Pain and difficulty in walking are usual symptoms that bring the patient to the physician. The patient literally "points" to the site of pain in the foot and ankle and indicates the manner in which there is dysfunction. The symptoms are static- that is, pain or impairment during walking, jumping, or running. The exam must be a systematic procedure to determine the precise deviation from normal.
>
> **2. Examination of Ankle:** The ankle joint must be examined with the foot bare. The range of motion tested is essentially the talus within the mortise, which must be judged from the excursion of the hind foot rather than the forefoot's planter flexion and dorsiflexion motions do not occur with the ankle mortise.
>
> **3. Examination of the Sole of the Shoe:** Examination of the sole of the shoe indicates the sites of weight bearing during the stance phase, toe-off, and heel strike. Examination of the sole depicts the weight bearing of the foot (shoe) during gait as well as indicating the location of the metatarsal heads. (p.69-71)

Cailliet (1997) explains the post examination process:

After a diagnosis is found, a properly fitted corrective shoe must be instituted. The term “corrective” is not an accurate concept, since shoes do not correct: they merely allow the foot to function properly without constrictions or inhibitions. Examination of a well-worn shoe will often indicate the problems of the gait. If orthosis is indicated, shoes must be such as to allow the orthosis to be inserted, and the orthosis must be accepted by the patient. A properly fitted shoe can also maintain the alignment attempted by the orthotic. Shoes should be fitted late in the day after prolonged ambulation since the normal foot spreads slightly and even deforms after a day’s activities. The shoe should be broad across the forefoot and have a firm counter and a last that conforms to the gait style. The shoe should be long enough to extend one inch past the big toe during weight bearing. The last should not be too firm or inflexible because some flexibility allows the intrinsic muscles of the foot to contract. The heel should be reasonably narrow to minimize plantar flexion of the foot on stance. A high heel impairs the gait and ensures gliding forward of the foot during stance and gait, causing a forward movement into the narrower toe region. Appliances can be added to a shoe to assure the desired function. A heel addition such as a Thomas Heel modifies the stance and the gait by altering the gait phase. Orthosis that is molded to the foot to alter its shape have a valid place in foot strain correction. They must be molded to the weight bearing foot and not impose any stress on any part of the foot, because discomfort will discourage use. The orthotic must also be able to fit into the shoe and allow space for the foot after being inserted. Ideally the foot should

be casted and a positive mold made of the foot on which the orthosis is molded. The orthotic may be made of various materials such as a type of plastic, Plexiglas, and so on. Initially metal was used. Today metal may be used for reinforcement, but rarely is it the only material used. The orthotic should include the heel to correct valgus or varus. The heel must be held snugly to ensure that the wedge is effective. (p.153-155)

2.4 NORMAL FOOT

Understanding how a normal foot should feel and function is significant to those who experience foot problems, because once a problem is identified it can be corrected.

Cailliet (1997) explains the proper criteria for a normal foot:

> (1) be pain free, (2) exhibit normal muscle balance, (3) have an absence of contracture; (contracture) a permanent shortening (as of muscle, tendon, or scar tissue) producing deformity or distortion, (4) have a central heel, (5) have straight and mobile toes, and (6) three sites of weight bearing during standing and during the stance phase of walking. (p.69)

2.5 PSYCHOLOGICAL ASPESCTS OF CLOTHING

2.5.1 Importance of Social Acceptance

Damhorst (1999) discusses the importance of clothing and social acceptance:

> Few of us, as individuals, can survive without the acceptance of others. As social creatures we need others to like us and compliment us so that we feel integrated…Dressing as an individual has its benefits but requires high levels of self-esteem and support from significant others…Some people are more willing than others to take risks and try far-out or unusual combinations. At an individual level, conforming versus nonconforming can affect self-esteem, social acceptance, and ultimately, success. (p. 207-208)

2.5.2 Effects of Living with a Disability

Patients that have been prescribed to wear specialty shoes have to deal with the stigma of a disability alone. Having to wear shoes that they are not used to wearing and that are aesthetically unattractive is just an additional predicament.

Lindemann (1981) states that patients diagnosed with a disability, " tend to feel that negative effects should have negative causes; disability and unattractive appearance, therefore, are equated with emotional instability and intellectual limitation, with neither rhyme nor reason" (p.2) .

Lindemann (1981) list stages of grief when diagnosed with physical ailments:

1. Shock may be physical or psychological, depending upon the nature of the disability. It is a massive protective mechanism which is usually relatively short in duration.

2. Denial is often more prolonged and is used to protect the individual from implications of severe disability which may be devastating in the short run to the self-concept and emotional stability of patient and family. It is a helpful mechanism if it is slowly relinquished as accommodation is made to the changes required and possibilities permitted by the particular disability. It becomes maladaptive if it interferes significantly with necessary treatment or rehabilitation procedures. Premature attempts to combat denial will ordinarily evoke defensiveness and, if successful, may destroy the hope that is necessary for motivation. Although unrealistic beliefs should not be positively reinforced, neither should they be confronted unless the issue is critical or the patient is ready to change.

3. Anger may parallel denial or follow it. It is a response to physical and psychological hurt, the perceived unfairness of the injury, and the fact that the person is being forced by circumstances to make significant changes in the way he/she looks at self and life. It may also be directed at family or at professional staff. It is important that it is viewed as part of a process and as a personal attack.

4. Depression may occur at any point in the process. It may reflect a perception of what the patient sees as a hopeless and unrewarding life ahead. It may reflect guilt about expressions of anger, especially if they have been irrational.

5. Adaptation to a physical disability may vary from optimal, positive self-actualizing to negative, embittered retreat. This will usually reflect both the inner resources which the patient originally possessed and the treatment which has been received. In the case of developmental disabilities and other chronic impairments, patient and family are generally spared acute physical trauma, and the patient frequently does not have to alter an established adjustment the disability. (p.3-4)

2.6 FASHIONING

2.6.1 Identifying Fashion

Anspach (1967) states how fashion is identified:

> The design may become a choice making process that begins with the designer. To answer the question of what determines which models a designer will present, we must focus on three factors that affect the decision: (1) the designer's reason for designing; (2) his/her understanding of dress; and (3) his/her sense of business. Two of these factors relate to the individual's view of themselves and the social culture in which he/she lives, while the third

> concerns his degree of involvement in an economic system that is geared to consumer demand and the profit incentive. (p.55)

2.6.2 The Use for Fashion

Anspach (1967) explains the use for fashion:

> The use for fashion is to express personality. In the interest of self-security we try to function in society without anxiety; we seek the compromise that allows us to exercise our individual difference within the group. This complex need is characterized by psychologist Edmund Bergler as involving three reputations concerned with dress: (1) the reputation of belonging; (2) the reputation or mental impression every woman wants to convey to others; (3) the reputation or unconscious impression of herself which she wants to convey first to her inner conscience and later to the environment. (p.25)

2.6.3 Fashion Cycles

Fashion and trends are constantly changing. In order for the fashion of specialty shoes to improve aesthetically, the same type of research used in mainstream fashion should be used for orthopedic shoes. The study of upcoming fashion must be evaluated in the development of an aesthetically improved option for specialty shoes.

Frings (1982) explains the cycle of fashion:

The way in which fashion change and acceptance occurs is usually described as a fashion cycle, composed of the introduction, popularity, and finally, the rejection of the style.

Introduction

A designer interprets the times in a creative form, and then a manufacturer offers the new styles to the public.

Increase in Popularity

As the new fashion is purchased, worn, and seen by more people, it begins to rise in popularity.

Peak of Popularity

When a fashion is at the height of its popularity, it may be in such demand that many manufacturers copy it or produce adaptations of it at many price levels.

Decline in Popularity

Eventually, so many copies are mass produced that fashion-conscious people tire of the style and begin to look for something new.

Rejection of a Style, or Obsolescence

In the last phase of the fashion cycle, consumers have already turned to new looks, thus beginning a new cycle for another style. (p.47-48)

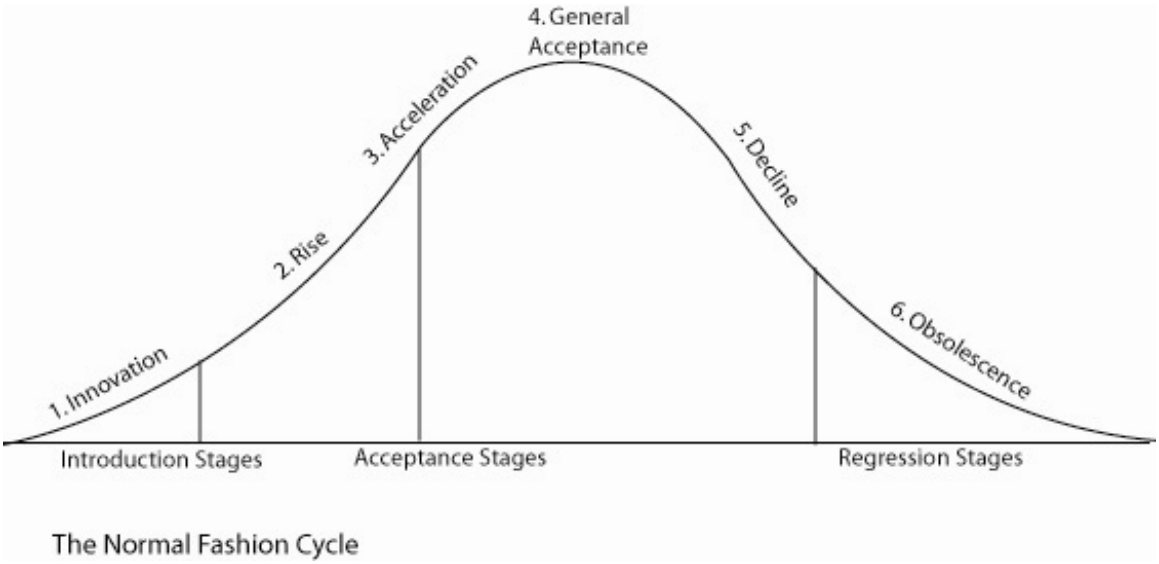


Figure 9 (Frings, 1982, p.47)

Fashion Followers

Frings (1982) evaluates fashion followers:

> Fashion followers emulate others only after they are sure of fashion trends.
>
> Most consumers are fashion followers, for several reasons:

- They lack the time, the money, and the interest to devote to fashion leadership.
- They need a period of exposure to new styles before accepting them.
- They are insecure about their tastes and therefore turn to what others have already approved as acceptable and appropriate.
- They want to keep up with their neighbors or peer group or to be accepted by them.
- They tend to imitate people they admire.

Fashion followers cause most of the fashion industry to be copyists or adapters. From a marketing point of view, fashion followers make mass production successful, because volume mass production of fashion can be profitable only when the same merchandise is sold to many consumers. (p.50)

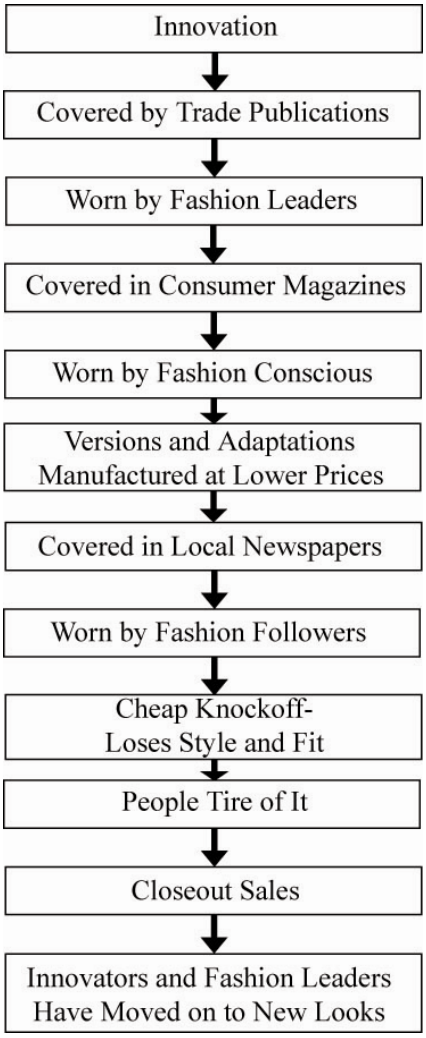


Figure 10 Inter-relationship of the fashion cycle, the traditional adoption theory, the fashion press, and manufacturing (Frings, 1982, p.51)

2.6.4 FORECASTING

Predicting what the next fashion trend is a way to keep specialty shoes more mainstream.

Frings (1982) states that:

> Fashion trends are directions in which fashion is moving. Fashion forecasters have to identify and analyze signs indicating forthcoming change. They base their judgment on experience, awareness of trend-setting designers, fashion cycles, and economic, political, social and technological influences on both the garment industry and the consumer. Fashion forecasters must do all of the following:
>
> - Decide which fashions are prophetic
> - Estimate which segment of the market will accept a particular fashion, and
> - Determine at what time these fashions will be acceptable to target customers (p.56)

"The study of past and present trends is a way to predict what the present fashions will be, although it may not be exact" (Damborst, 1999, p.528-529).

Randolph Duke is noted as Hollywood's designer of choice. He states that, “Designers are futurist by nature, exceedingly sensitive to the social and aesthetic forces that propel us forward in our lives. They see, they feel, they sense that which is most personal, most compelling, most certain to carry us into the next day, the next season, the next millennium” (Schlachter & Wolf, 1999, p.10).

Schlachter & Wolf (1999) collected statements on fashion, color and the future of fashion from two of fashion’s 40 top designers:

> *On fashion in the next millennium*: Women today are free to enjoy fashion for their own pleasure. I envision for the future a further liberation from the dictates of fashion “rules.” Choice is free. In order to be competitive, the established fashion houses are concentrating on evolving their own style and image by offering variety of the fashion market. Because of cultural globalization, fashion has become similar all over the world. Maybe this will generate a desire for personalization and individuality. - Angela Missoni
>
> Fashion is a continuous progression of ideas. It may seem to jump forward erratically, but in fact it always turns back and retraces its steps. In about the year 2050 we should see some interesting new developments in fashion that will be conveyed through the use of stretchable fabrics. These new developments will draw even more attention to detail and form, widening the scope of what is thought to be fashionable. - Daryl Kerrigan (p.85).

2.6.5 COLOR

Having color alternatives is important because color is a way to express one's individuality and emotions. Most people relate very personally to color because it causes emotional responses, some based on events of our lives and culture.

"Color is the first element to which consumers respond. People relate personally to color, usually either selecting or rejecting a garment because of its color appeal. Therefore, designers must consider there customers and provide colors that are both appealing and flattering" (Frings, 1982, p.134).

Whelan (1994) explains the expressions behind color:

> Certain colors are acknowledged for portraying different messages or communications. For example, powerful, the most powerful combinations, full of excitement and control, are always associated with the color red. No matter what color it is combined with, red can never be ignored. It is the ultimate power color: forceful, bold, and extreme. Powerful color combinations are symbols of our strongest emotions, love and hate. They represent emotional overdrive. Another example, friendly, color schemes that convey friendliness often include orange. Open and easy, these combinations have all the elements of energy and movement. They create order and equality without a sense of power or control. Orange, along with its color wheel, neighbors, is frequently used in fast-good restaurants because it projects an inviting message of good food at a friendly price. Because it is energetic and

> glowing, orange is the international safety color in areas of danger. Orange life rafts are easily seen on blue or gray seas (p. 46).

Whelan (1994) explains the importance of color:

> Professionals in the fields of color research, color merchandising advertising and marketing, as well as the related professions of graphic design, fashion, interior design, and industrial design, make selections and reach a consensus on which colors will be successful and fashionable for the coming years. This color forecasting translates into color trends. Along with the current economic and cultural direction of trade markets, product negotiation, median incomes, and social status, decisions about color trends are also based psychological insight into the use of color. Color choices are vitally important to all retail sales, products, and services. In every industrialized nation, color is big business.
>
> An organization involved in setting color trends that impact a number of industries is the Color Association of the United States (CAUS), located in New York City, specializes in color predictions for fashion, interior design, and environmental industries. A panel of eight to twelve color specialists meets annually to determine the ongoing impact of the current trends. Color trends are closely linked to the economy, and as a result advertising and marketing strategies are affected whenever a new color or color combination emerges on the world market. The color trend becomes part of the media

> vocabulary, sending a “color message” to the world via television and print. As consumers become comfortable with color in daily life, analysts look for newer and more exciting color combinations to stimulate their emotions and product needs. This is often interpreted as “something new” or “in style” (p.123).

“Designer, Angela Missoni, states that, “Wearing color expresses a certain state of mind, just as color can influence the well-being of a person. Color will always be used to express changes in life and society.” In fact, it seems likely that the importance of color in fashion can only grow, as men and women increasingly seek to distinguish themselves in a homogenized world. It is, after all, the universal communicator” (Schlachter & Wolf, 1999, p.30-31).

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION TO GUIDELINES

While no single design approach can guarantee success for every circumstance the methods outlined in this section are intended to allow designers to conceive stylish options for specialty shoes.

3.2 Step 1: Identify the Objective

Some of the relevant topics researched for this study are as follows, the foot anatomy, common foot problems, the medical foot examination and last but not least, the processes of fashion.

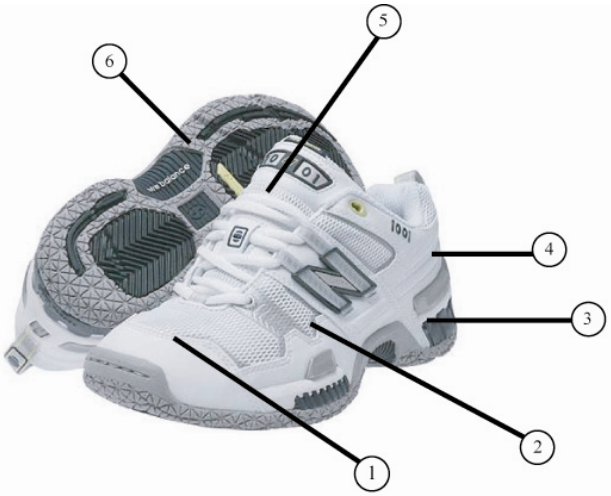
The target user group addressed by this research consists of consumers of specialty shoes; however, the patients vary not only by height, weight, age, sex, and in the exact nature of their physical abnormalities, but also in their personality traits, vocation, and lifestyle.

3.3 Step 2: Research

The designer must research all areas of importance to the particular subject. For this study, the foot anatomy, research of common foot problems, self image and clothing, fashion, study of orthotics, brainstorming for a variety of possibilities, and conducting user surveys has been analyzed to get an understanding the wants of the consumer.

3.4 Shoe Components[3]

To improve the current status of specialty shoes one must have an understanding of the components of the normal shoe. Below are the basic components of a normal shoe.



Upper of the Sole
All parts or sections of the shoe above the sole that are stitched or otherwise joined together to become a unit, then attached to the insole and outsole. The upper of the shoe consists of the vamp or front of the shoe, the quarter i.e. the sides and back of the shoe, and the linings. Uppers are made in a variety of different materials, both natural and synthetic. Leather became the obvious cover of choice because it allowed air to pass through to and from the skin pores thereby providing an opportunity to keep the feet cool.

1). Toe Box
The toe box refers to the roofed area over and around the part of the shoe that covers the toes. The height and of the toe box is dictated by shape of the last used to construct the shoe.

2). Vamp
The vamp is technically the whole forepart of shoe upper.

3). Heel
The heel is the raised component under the rear of the shoe. Heels consist of a variety of shapes, heights, and materials and are made of a series of raised platforms or a hollowed section.

4). Counter
The counter is the reinforcement for back the of shoe, made of stiffened fibre material, shaped to contour to sides and back of heel, helps to keep the shape of the shoe.

5). Tongue
The flap of material under the laces or buckles of a shoe.

6). Outer Sole
This is the outer most sole of the shoe, which is directly exposed to abrasion and wear. Traditionally made from a variety of materials, the outsole is constructed in different thickness and degrees of flexibility. Ideal soling materials must be waterproof, durable and possess a coefficient of friction high enough to prevent slipping.

Table 2 Shoe Components

[3] From www.diabetic-foot.net/shoe.htm , Copyright 2005 CLEAR/Rosalind Franklin University

3.5 Ideal Characteristics of an Orthopedic Shoe[4]

Orthopedic shoes must support whatever problem area that the patient may have, so the design and coverage of the problem area is essential. The designer should also have knowledge of various foot problems so that the improved design can also accommodate a patients' individual issue(s).

Orthopedic shoes should have the following characteristics:

1). A firm heel counter
2). A wide enough toe box to accommodate toes without pinching them
3). A semi-rigid or rigid shank
4). A removable inner sole
5). A long vamp
6). A heel measuring between ¾ - 1½ inches

Table 3 Ideal Characteristics of an Orthopedic Shoe

[4] From http://www.footsmart.com/Therapeutic-Shoes-Orthopedic-Shoes.aspx , Copyright 2006 FootSmart.com

3.6 Brainstorming Chart

This chart shows the characteristics of a normal shoe, orthopedic shoe, fashion, and the goal that is attempted to be achieved: development of an improved styled orthopedic shoe.

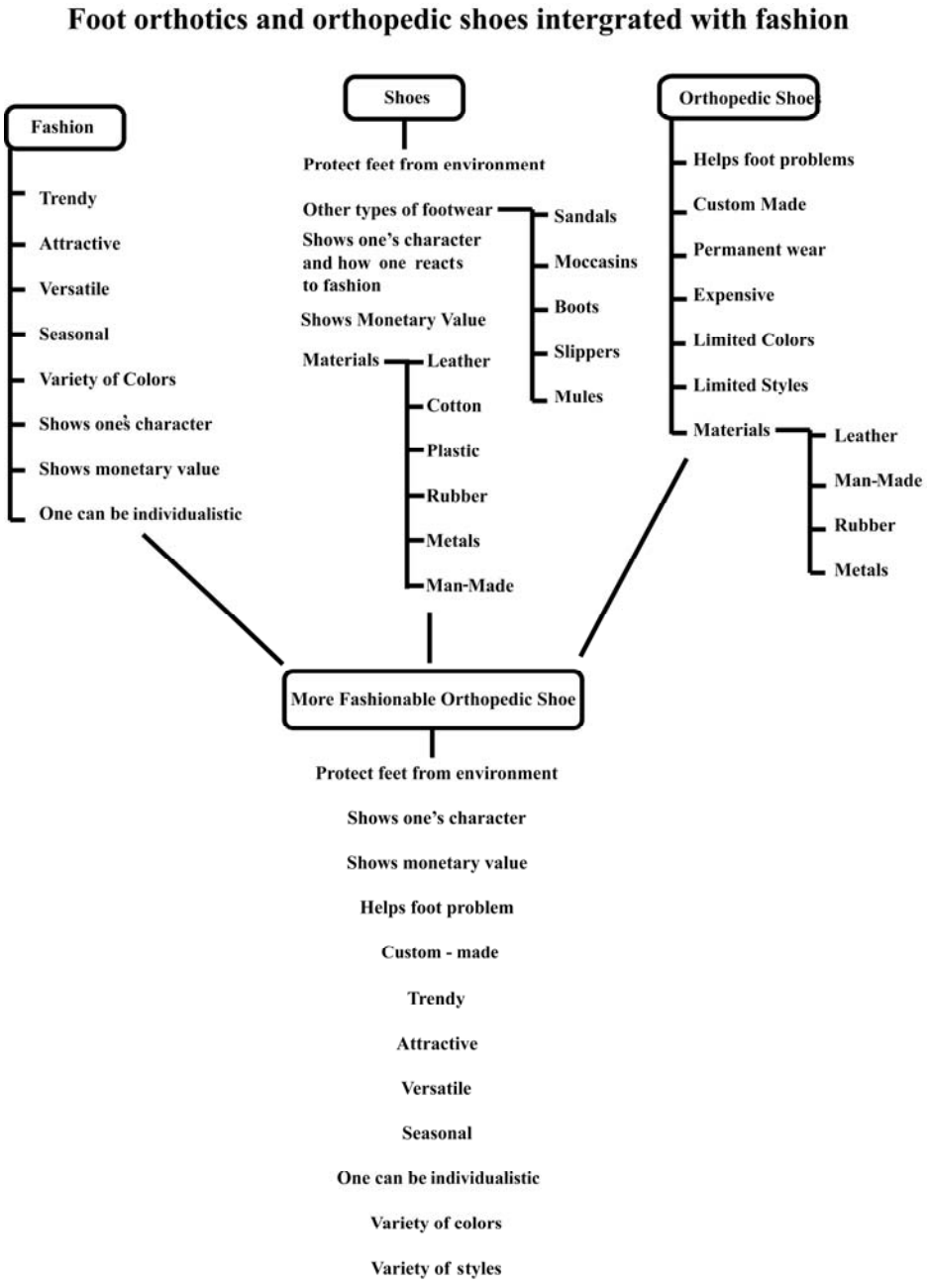


Table 4 Brainstorming

3.7 Step 3: Data Collection/Analyzing

Conducting user surveys is a way to get the opinions of consumers and a more focused idea of what to design. I have conducted two surveys to get an understanding of what qualities consumers would like in a specialty shoe.

Study 1

Sample

The purpose of conducting this research is to gather personal characteristics and fashion preferences as an initial step in the development of fashionable shoes for people with orthopedic problems.

Because the opinions of consumers of orthopedic shoes are relevant to this research, the location where data collection took place is Auburn-Opelika Family Foot Care, Inc. There were fifteen participants ranging in ages from 19-75 years. Occupations, lifestyles, and the reason for wearing foot orthotics or specialty shoes vary. The participants all wore specialty shoes.

Data Collection

The research was conducted over a period of six weeks during office hours. Upon arrival, participants were handed a survey and given a verbal description of what the survey contained. Participants were also told that Auburn-Opelika Family Foot Care, Inc. was not directly or indirectly a part of conducting this research. The survey completion took approximately 10 to 15 minutes. To protect personal privacy,

the participants were not required to list there names and were promised that once research was completed the information would be shredded.

Data Analysis

Questionnaire

A questionnaire was developed to explore the participants' preferences on styles and fashion, their opinions on the importance of color, and comfortable shoes, their emotional response to having a disability, and their desires in a new and improved specialty shoe or shoe that requires foot orthotics.

The questions used a five-point scale to ask for these opinions. Participants were asked to circle a response between SA (strongly agree) and SD (strongly disagree).Once data was collected a sequitur was developed.

Survey

Background Information

1. Age _____
2. Age you began wearing foot orthotics or specialty shoes _____
3. Occupation(s) _____
4. Lifestyle (ex. Parent, grandparent, exercise …)
   _____
   _____
   _____
   _____
   _____
   _____

5. What are your reasons for wearing foot orthotics or specialty shoes?
   _____
   _____
   _____
   _____
   _____
   _____

Read the following statements and respond by circling one of the options at the left of the statement. The options are indicated by the following symbols:

SA= Strongly Agree
A= Agree
N= Neutral
D= Disagree
SD= Strongly Disagree

6. I think foot orthotics and specialty shoes are:

SA A N D SD a. fashionable
SA A N D SD b. comfortable
SA A N D SD c. suitable for engaging in activities
SA A N D SD d. inexpensive
SA A N D SD e. individualistic (*makes one feel like an individual*)
SA A N D SD f. diverse in style
SA A N D SD g. modern
SA A N D SD h. easy to use
SA A N D SD i. other: (explain)
_____

<u>Conformity- Individuality</u>

SA A N D SD 1. I feel uncomfortable when my shoes are different from others.

SA A N D SD 2. I am apprehensive of being different from others when I wear orthopedic shoes.

SA A N D SD 3. I like to dress differently from others as often as possible.

SA A N D SD 4. Wearing shoes that are different from my usual style makes me feel uncomfortable.

SA A N D SD Other (explain)
_____
_____
_____
_____

Style Interests

SA A N D SD 1. I spend more money on my shoes compared to other people.

SA A N D SD 2. Having shoes that are in style is important to me.

SA A N D SD 3. I don't care whether my shoes are different from others; I wear them because I like them.

SA A N D SD 4. Fashionable shoes are important to me.

SA A N D SD 5. My shoes are highly unique in design.

SA A N D SD 6. Fashion is very important to me.

SA A N D SD 7. I try to keep my shoes in step with the latest fashion.

SA A N D SD Other (explain)
_____
_____
_____

Aspirations

SA A N D SD 1. I would like to keep my future shoes in step with the latest fashion.

SA A N D SD 2. In the future it will be very important to me that my shoes be comfortable.

SA A N D SD 3. In the future I would like there to be a change in the design of orthopedic shoes.

SA A N D SD 4. In the future I would like colors/trends that keep pace with fashion.

SA A N D SD 5. In the future I would like more improvement put into the design but nothing taken away from the comfort of the shoe.

SA A N D SD 6. I would like different styles for different occasions and seasons.

SA A N D SD 7. In the future I would like my shoes to express who I am.

SA A N D SD Other (explain)

_____
_____
_____
_____
_____

CIRCLE EACH SHOE THAT IS APPEALING TO YOU

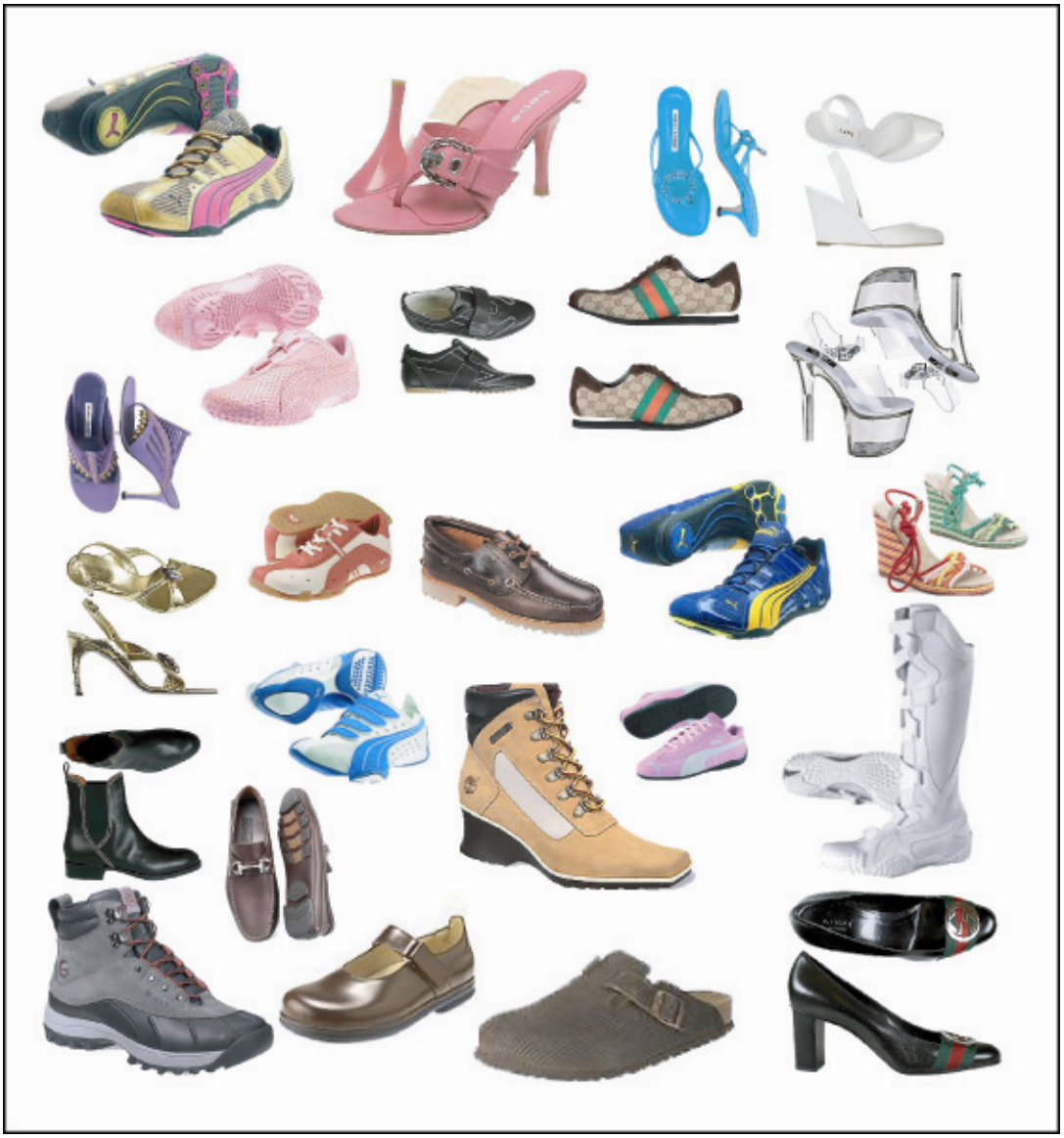


Table 5 Survey Shoe Selection

Summary and Conclusions

Survey Results

I think foot orthotics and specialty shoes are:

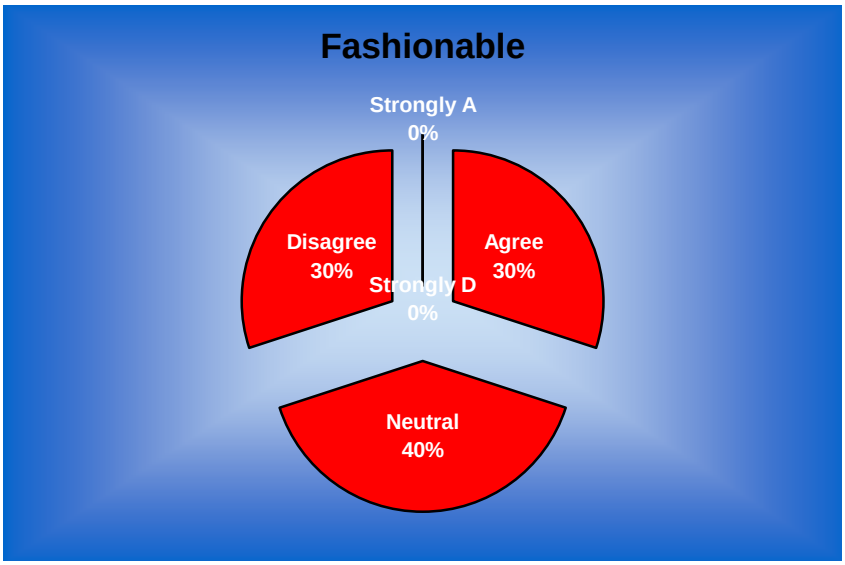


Figure 11 shows the percentages of how the participants felt about the fashion of the current specialty shoe.

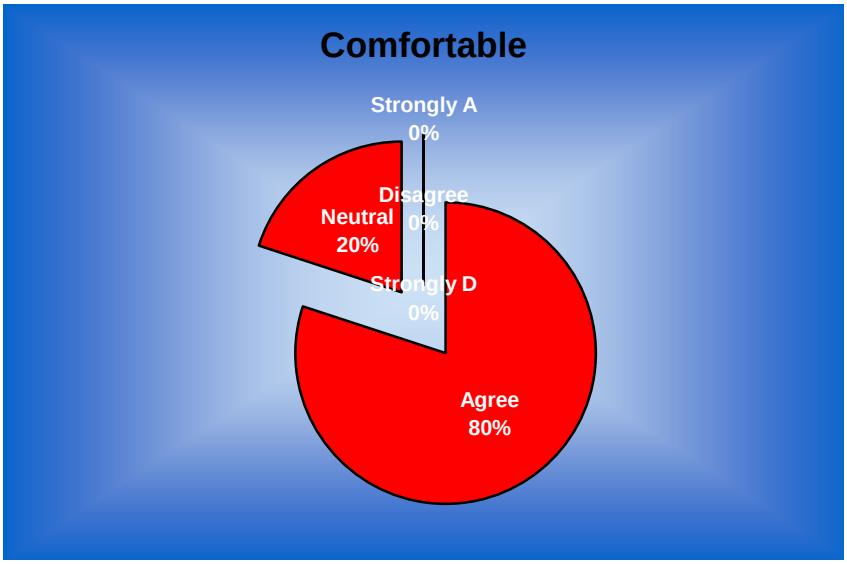


Figure12 shows the percentages of how the participants felt about the comfort of the current specialty shoe.

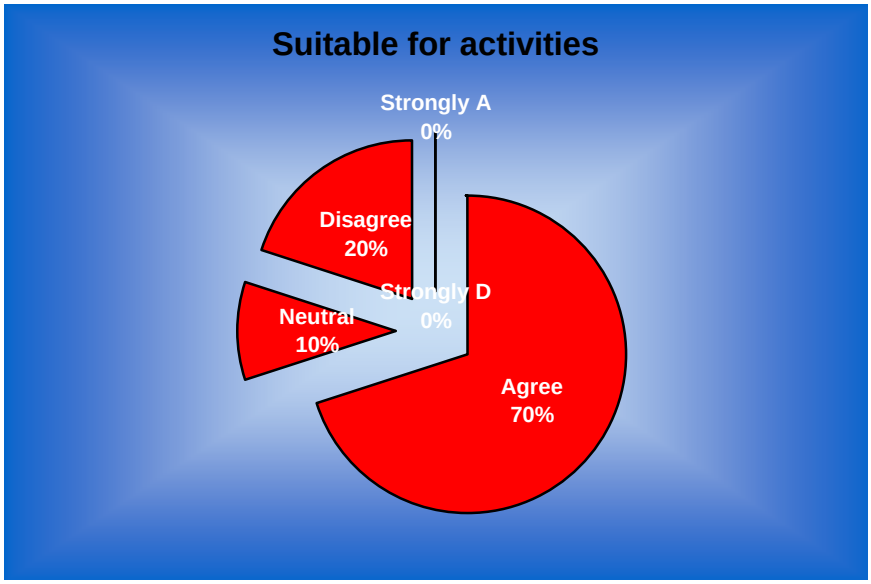


Figure 13 shows the percentages of how the participants felt about the suitability of the current specialty shoe.

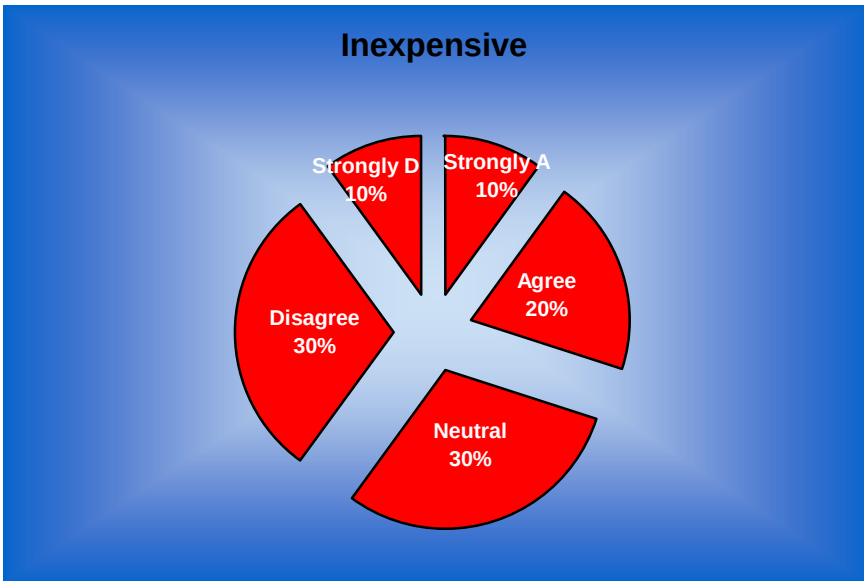


Figure14 shows the percentages of how participants felt about the cost of the current specialty shoes.

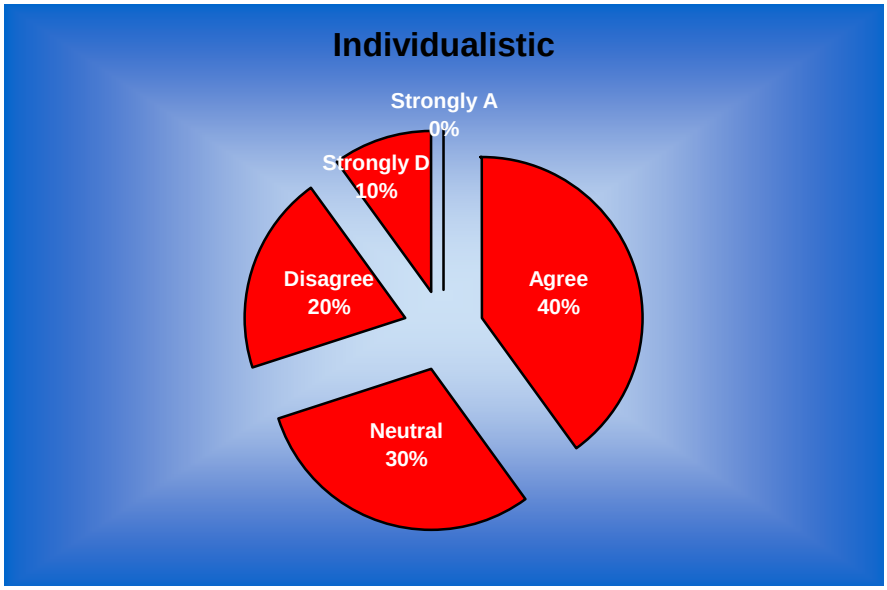


Figure15 shows the percentages of how participants felt about the individuality of the current specialty shoe.

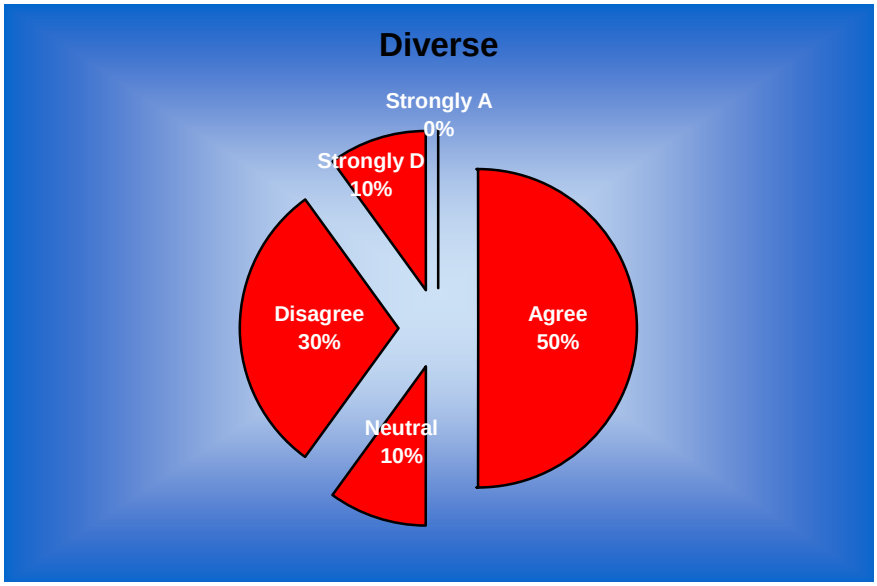


Figure 16 shows the percentages of how participants felt about the diversity of the current specialty shoe.

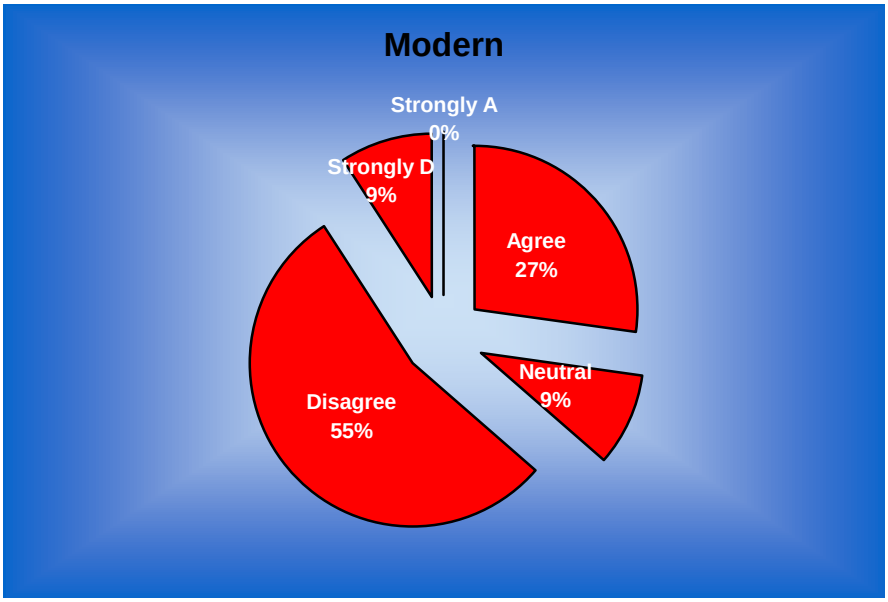


Figure 17 shows the percentages of how participants felt about the modernism of the current specialty shoe.

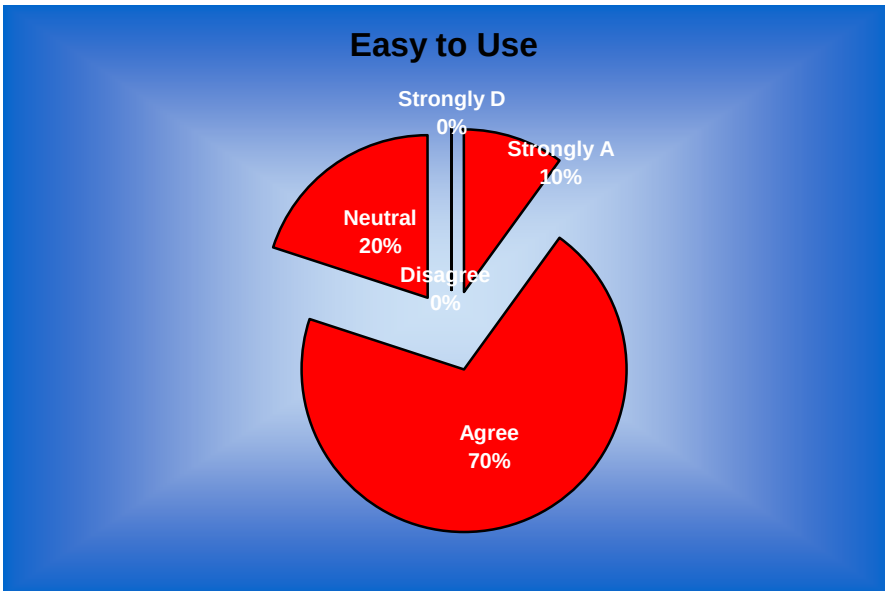


Figure 18 shows the percentages of how participants felt about the usability of the current specialty shoe.

Conformity-Individuality

Conformity: Action or behavior in correspondence with socially accepted standards, conventions, rules, or laws.

Individuality: The aggregate of qualities and characteristics that distinguish one person or thing from others.

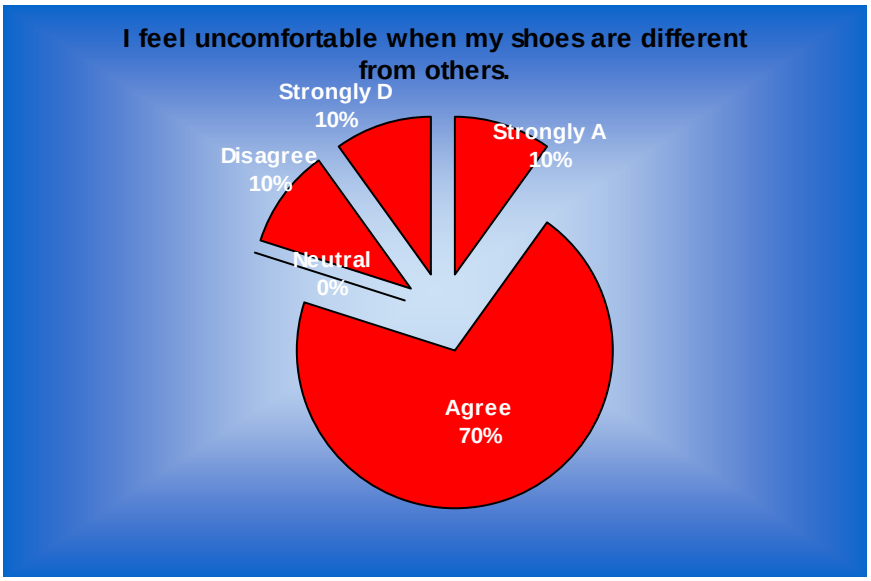


Figure 19 shows the percentages of how participants felt about being different from others.

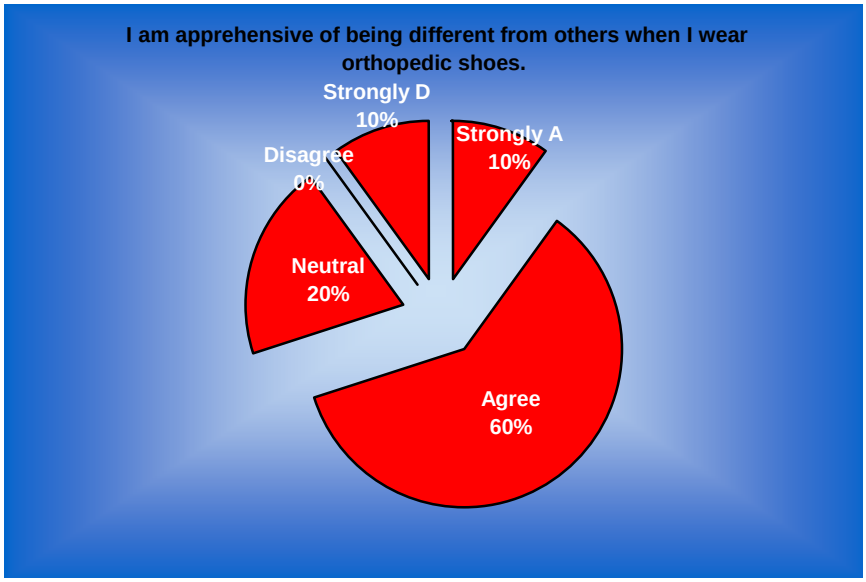


Figure 20 shows the percentages of how participants felt about being different while wearing specialty shoes.

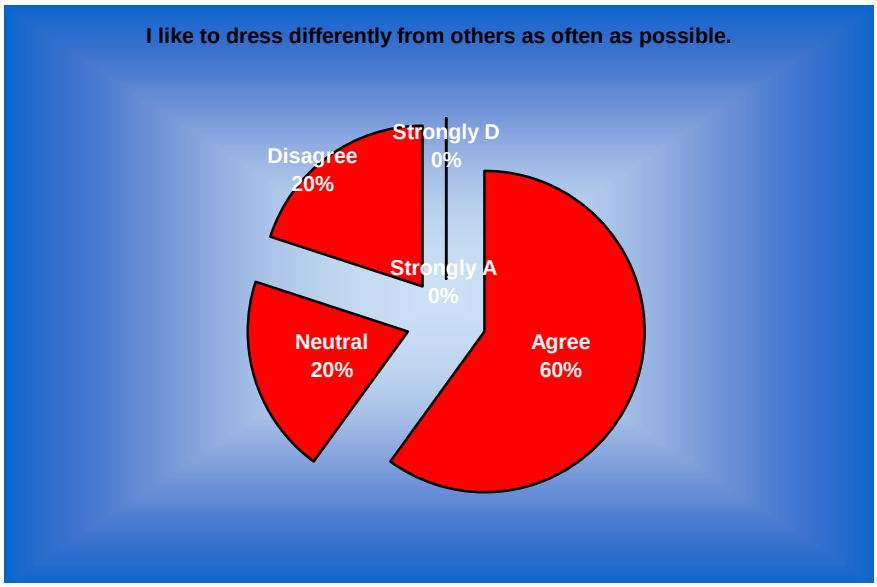


Figure 21 shows the percentages of how participants felt about dressing differently from others.

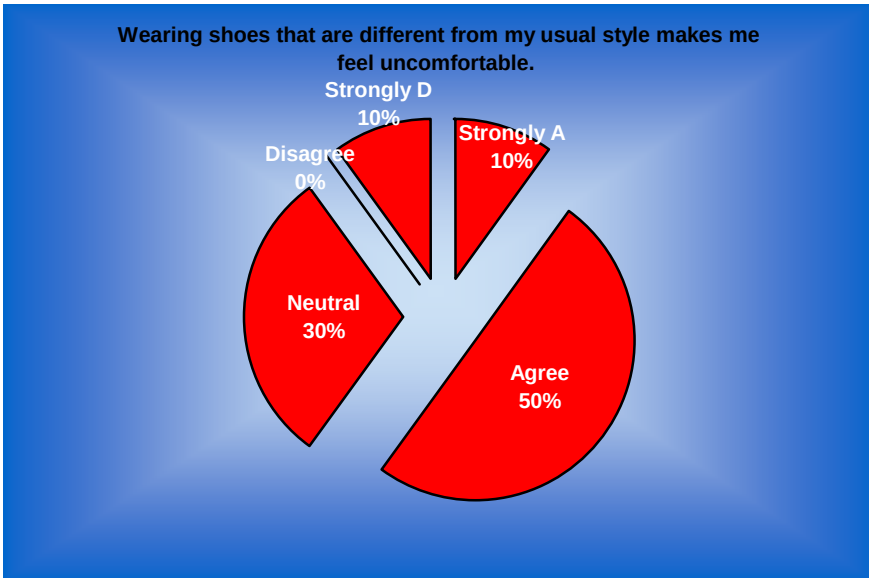


Figure 22 shows the percentages of how participants felt about dressing differently from what they are used to.

Style Interest

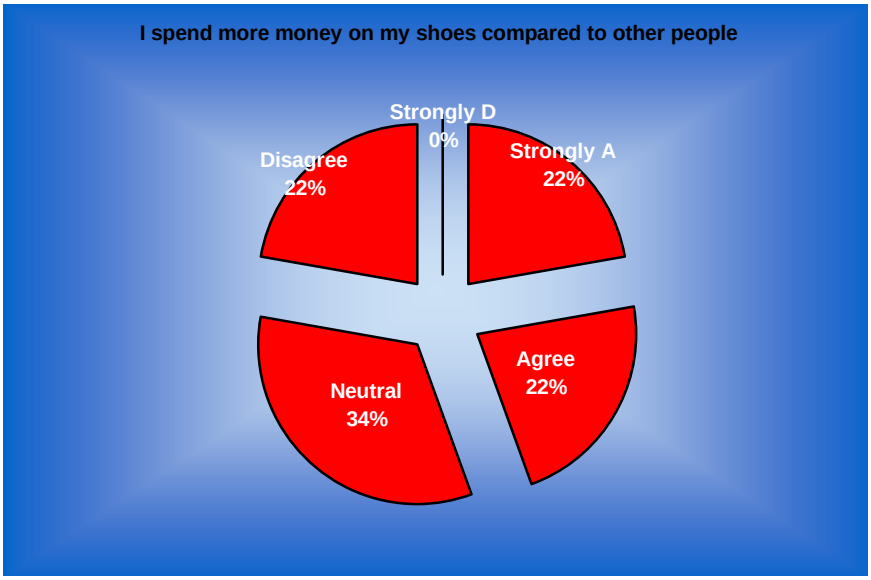


Figure 23 shows the percentages of how participants felt about spending money on their shoes compared to others.

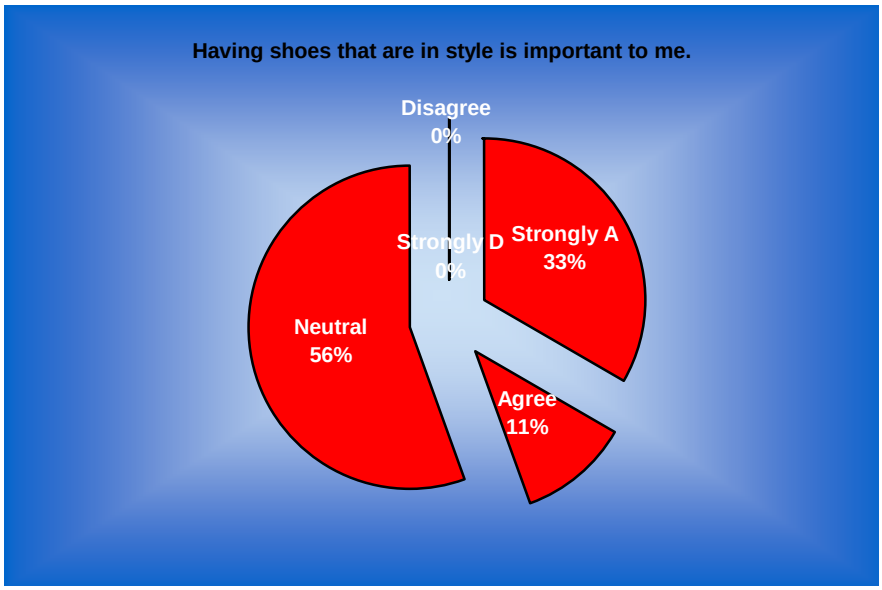


Figure 24 shows the percentages of how participants felt about having shoes that are in style.

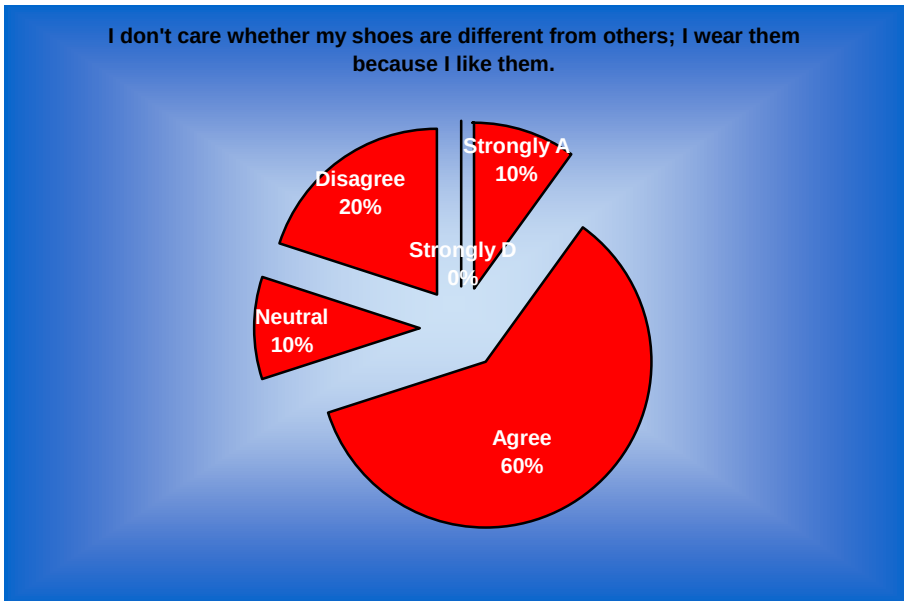


Figure 25 shows the percentages of participants that don't care if their shoes are different from others; they wear them because they like them.

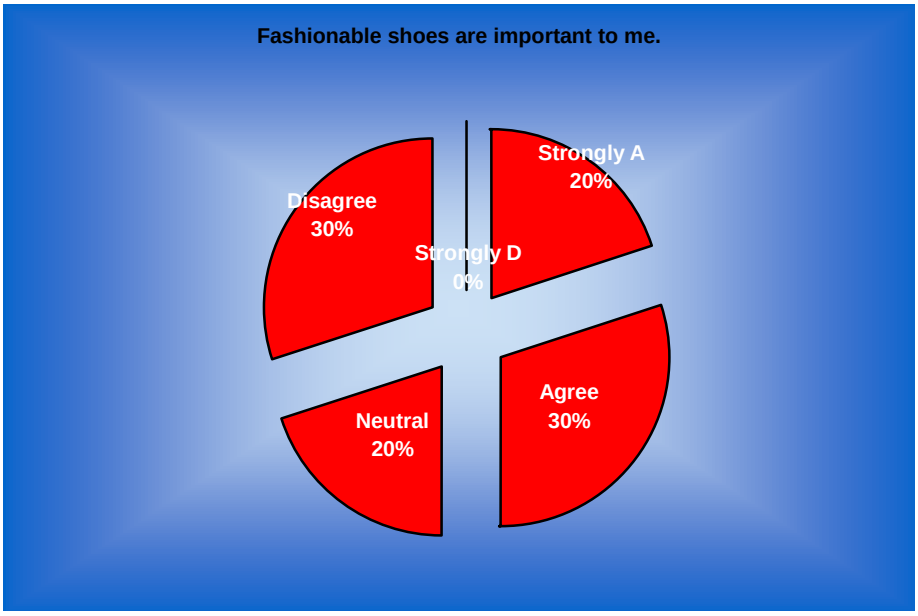


Figure 26 shows the percentages of participants who felt fashionable shoes are important to them.

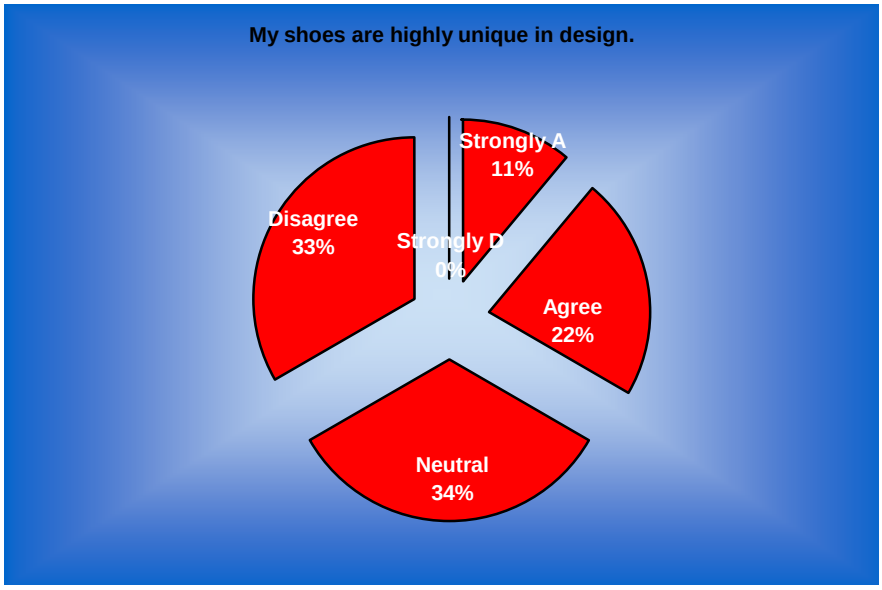


Figure 27 shows the percentages of how participants felt about unique designs.

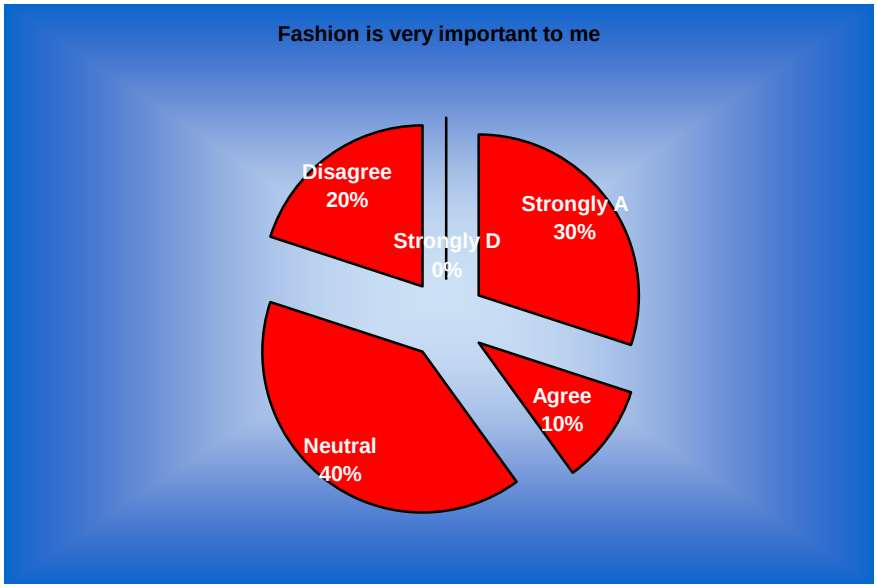


Figure 28 shows the percentages of how participants felt about the importance of fashion.

Figure 29 shows the percentages of how participants felt about keeping up with the latest fashion.

Aspirations

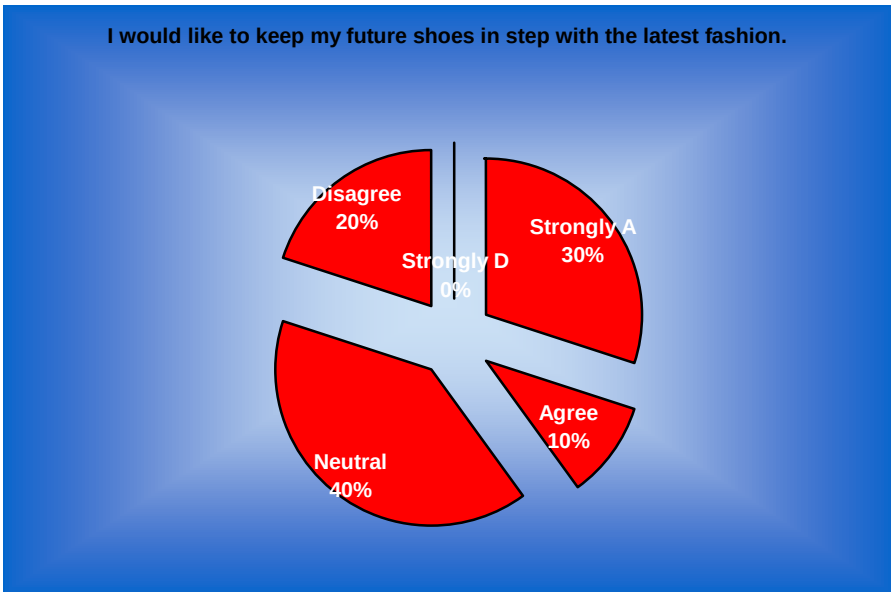


Figure 30 shows the percentages of participants who want to keep up with the latest fashion.

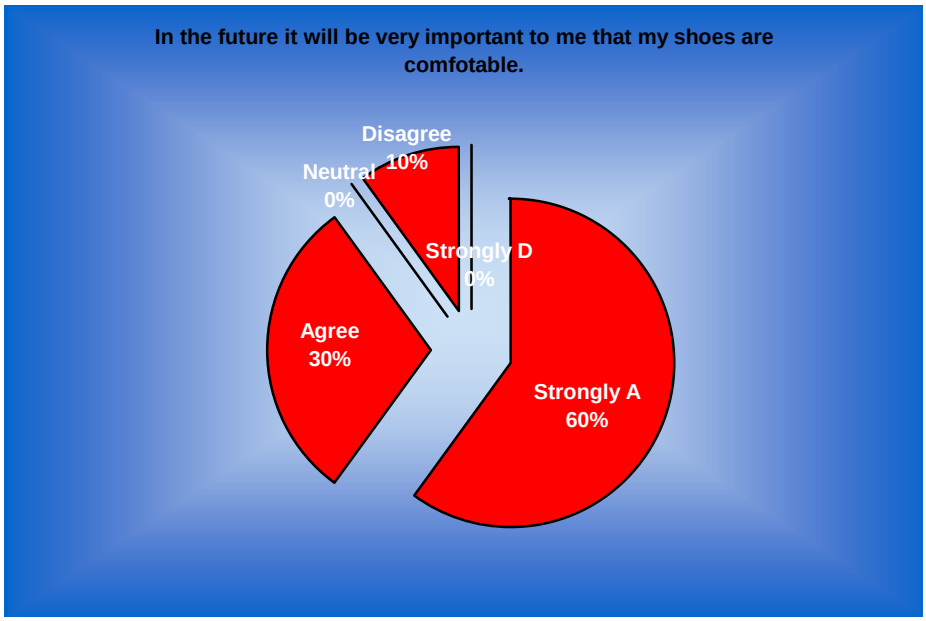


Figure 31 shows the percentages of participants who want comfortable shoes.

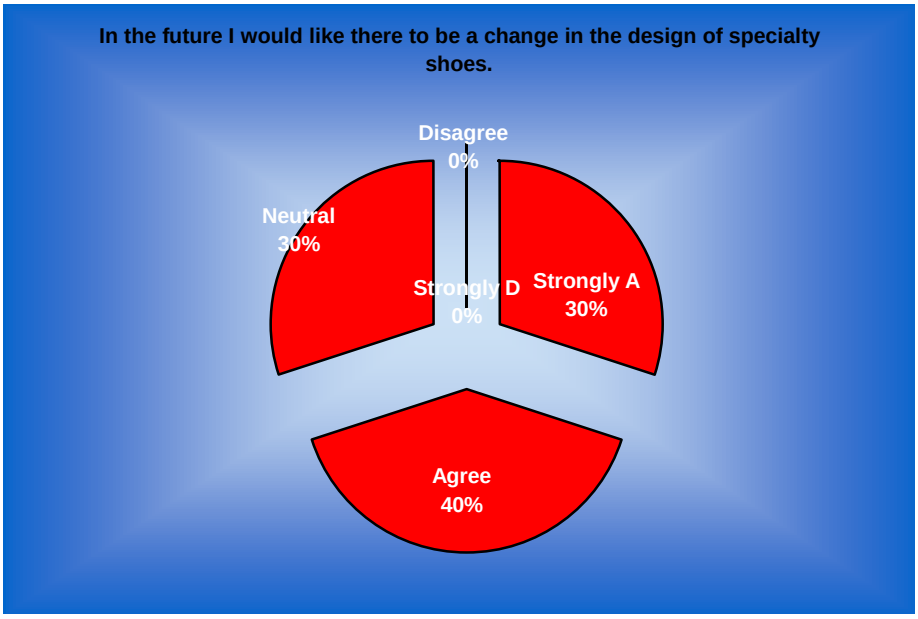


Figure 32 shows the percentages of participants who would like a change in the design of specialty shoes in the future.

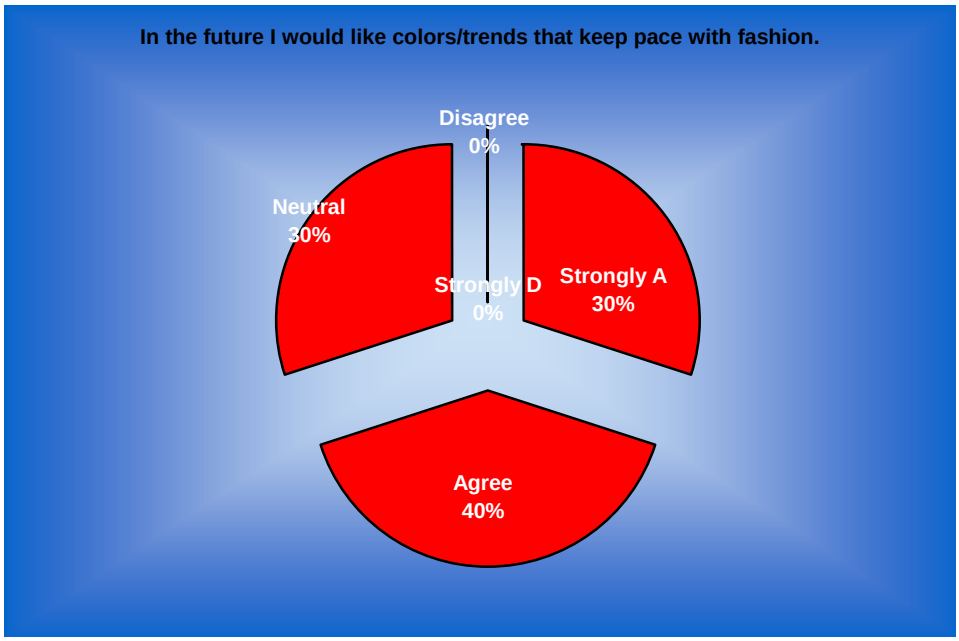


Figure 33 shows the percentages of participants who would like a variety of colors to keep up with the current fashions in the future.

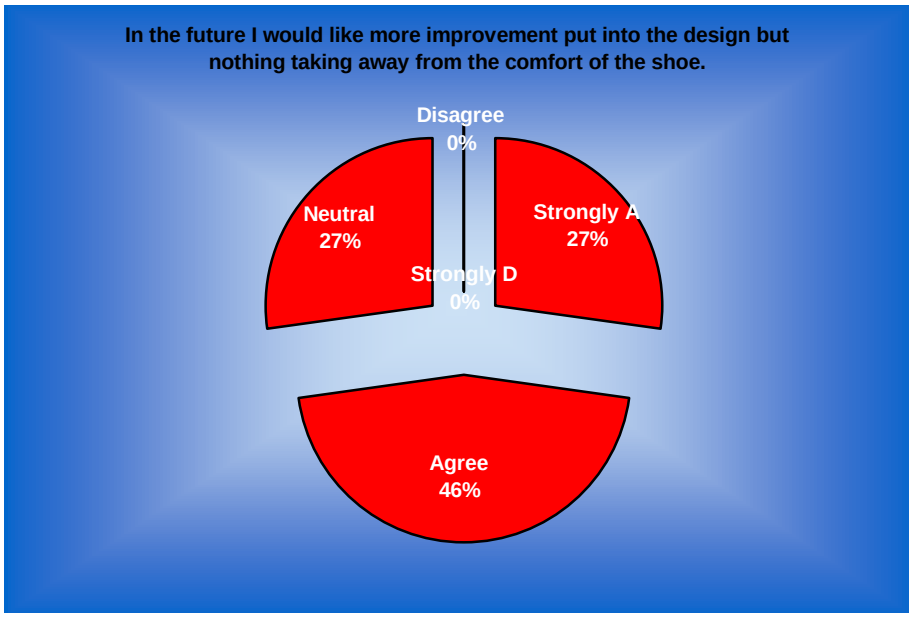


Figure 34 shows the percentages of participants who would like the aesthetic design to improve, but keep the same comfort.

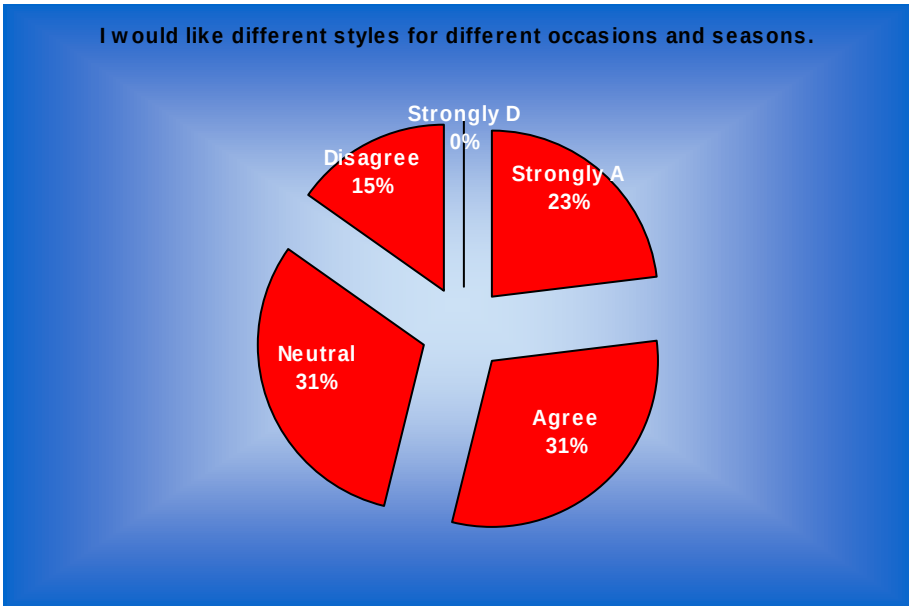


Figure 35 shows the percentages of participants who would like different styles for different occasions.

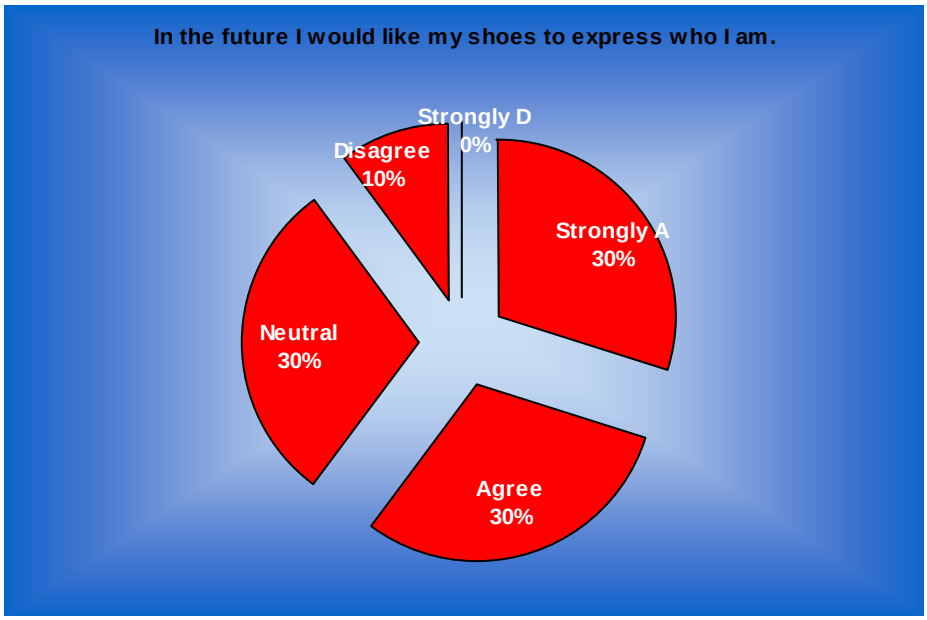


Figure 36 Shows the percentages of participants who would like for their shoes to express who they are in the future.

Visual Results

The following chart is an organizational chart. This chart displays verbal descriptions and emotions to describe the feeling one gets with the visual interaction of the shoes. Different style shoes and colors were chosen to represent each verbal description. The overlapped colored areas on the chart represent the overall choices that the participants made. A majority of the participants chose the shoes that were comfortable, colorful, and simple in design.

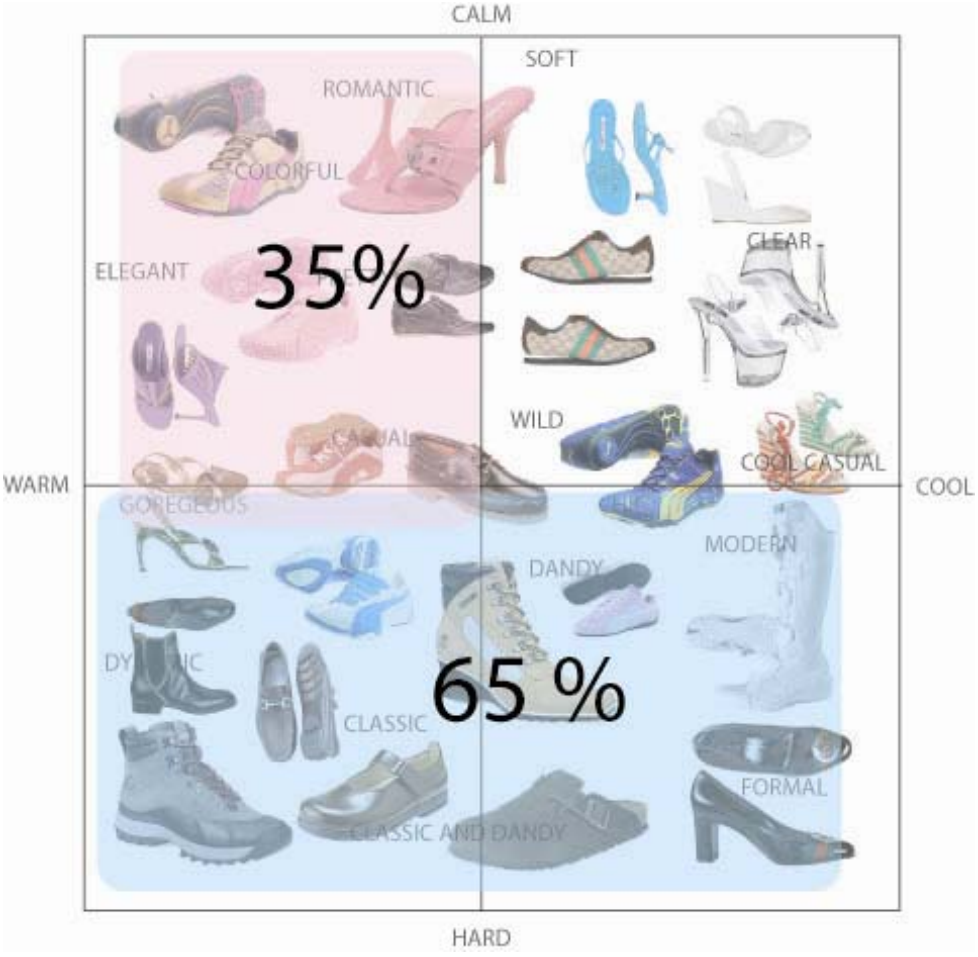


Figure 37 this figure is the chart that was used in the survey for participants to choose their choice of style.

Sixty-five percent of the participants selected shoes that were under the descriptions of classic, formal, dynamic, warm and modern. Thirty-five percent of the participants selected shoes under the descriptions of calm, casual, colorful, pretty, and gorgeous.

Survey Conclusion

- Participants would like a choice of the style options for different occasions
- Participants over the age of forty felt that the appearance of their shoes was less important than comfort. The younger participants worried more about appearance, but also wanted comfort.
- A majority of the participants would like a specialty shoe that is comfortable, yet modern, not too complex in design and is available in a sufficient choice of colors.

Study 2

Sample

The purpose for conducting this survey was to get an understanding of what qualities are important to customers when choosing something that is fashionable. This survey focused on common questions that are related to fashion and also how one becomes aware of fashion.

Because the opinions of everyday people were relevant to this research, the location where data collection took place is the Auburn University campus, Auburn, Alabama. There were 30 participants ranging in ages 19-60. The criterion for the participants was simply being current purchasers of fashion.

Data Collection

The research was conducted over a period of six weeks. The participants were randomly selected on Auburn University's campus, and were personally handed an information letter and survey. The survey completion took less than five minutes. To protect personal privacy, the participants were not asked their names and were promised that once the research was completed the information would be analyzed and shredded.

Data Analysis

Questionnaire

A questionnaire was developed to explore the participant's preferences in the area of fashion and how one learns of fashion. The questions used a Semantic differential rating scale (which is designed to measure connotative meaning of objects, events, and concepts [www.dictionary.com]). Participants were asked to circle a numerical response between disagree and agree. Once data was collected each of the results from each participant was placed into charts for visualization.

Survey

1. What is your age group?
   a. 19-25 b.25-30 c.30-40 d.40-50 e.60 and older

2. Priorities that one looks for when identifying fashion:
(Fashion: The most general term and applies to any way of dressing, behaving, writing, or performing that is favored at any one time or place)

   a. Colors

DISAGREE 1 2 3 4 5 6 7 AGREE

   b. The design of the item (example: shapes and forms)

DISAGREE 1 2 3 4 5 6 7 AGREE

   c. The materials

DISAGREE 1 2 3 4 5 6 7 AGREE

   d. How the item feels once it is tried on.

DISAGREE 1 2 3 4 5 6 7 AGREE

   e. How the item looks once it is tried on.

DISAGREE 1 2 3 4 5 6 7 AGREE

f. Can item be worn with other items that I currently have, to create my personal style?

DISAGREE 1 2 3 4 5 6 7 AGREE

g. The quality of the item.

DISAGREE 1 2 3 4 5 6 7 AGREE

h. The period of time the item became fashionable.

DISAGREE 1 2 3 4 5 6 7 AGREE

i. Will this item make me positively stand apart from every one else?

DISAGREE 1 2 3 4 5 6 7 AGREE

3. How do you determine what shoes are in fashion? (Fashion: The most general term and applies to any way of dressing, behaving, writing, or performing that is favored at any one time or place)

a. Peers
b. Magazines
c. TV advertisements
d. Word of Mouth
e. Other
(explain)_____

Summary and Conclusions

Survey Results

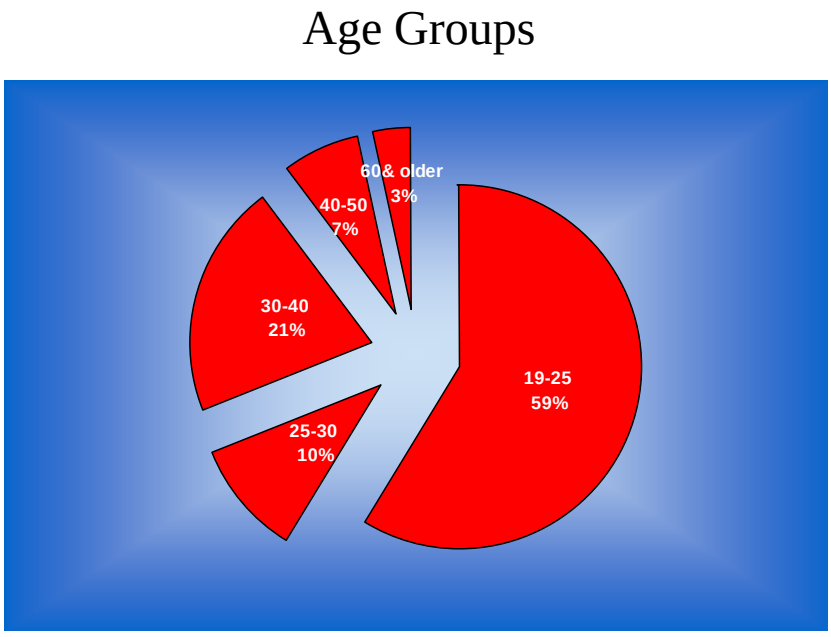


Figure 38 Age Groups

Priorities that one looks for when identifying fashion are:

(Fashion: The most general term and applies to any way of dressing, behaving, writing, or performing that is favored at any one time or place.)

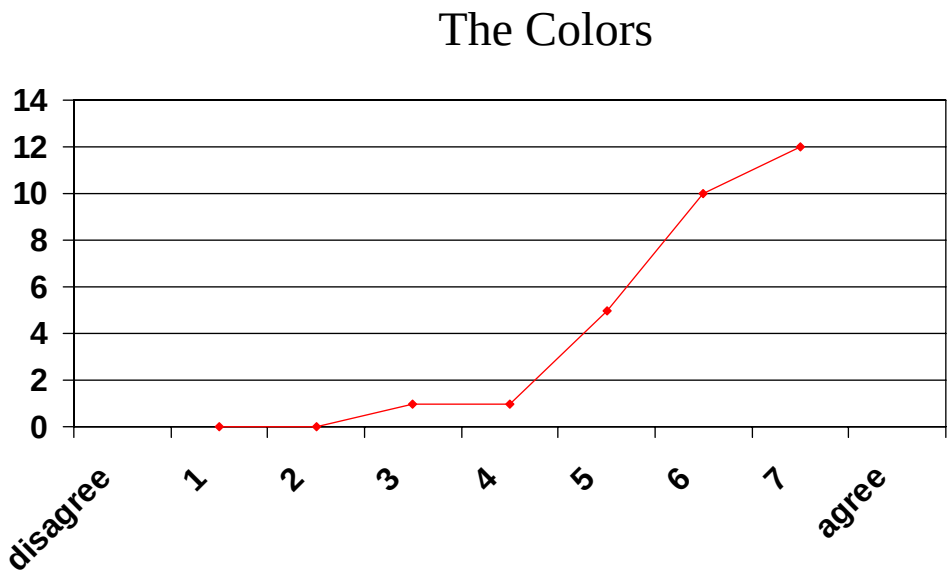


Figure 39 Colors

The design of the item (example: shapes and forms)

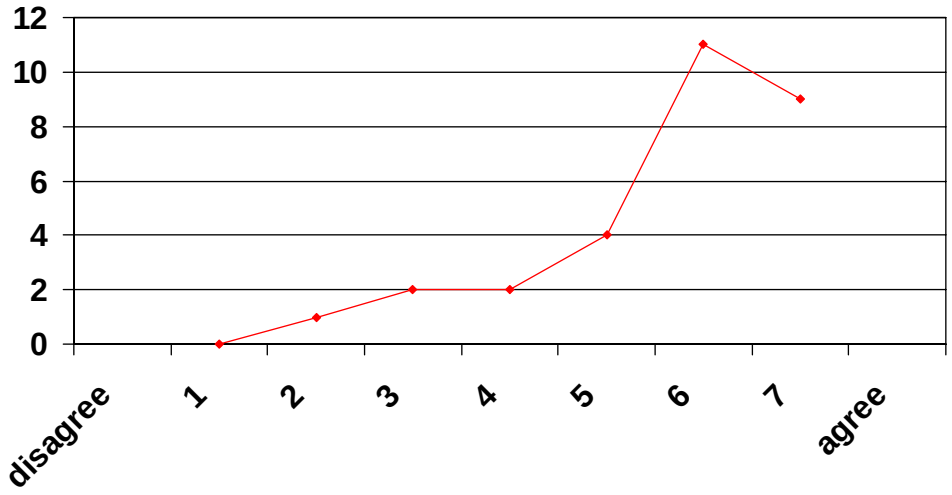


Figure 40 Design

The Materials

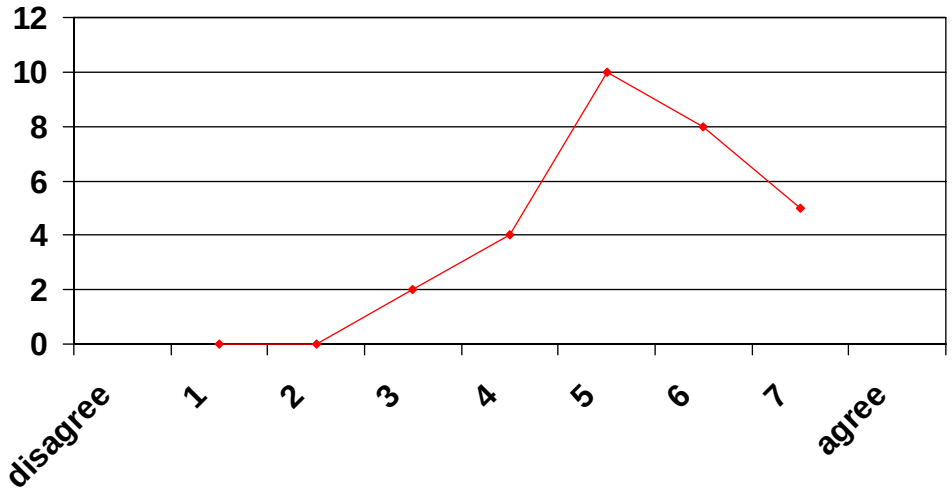


Figure 41 Materials

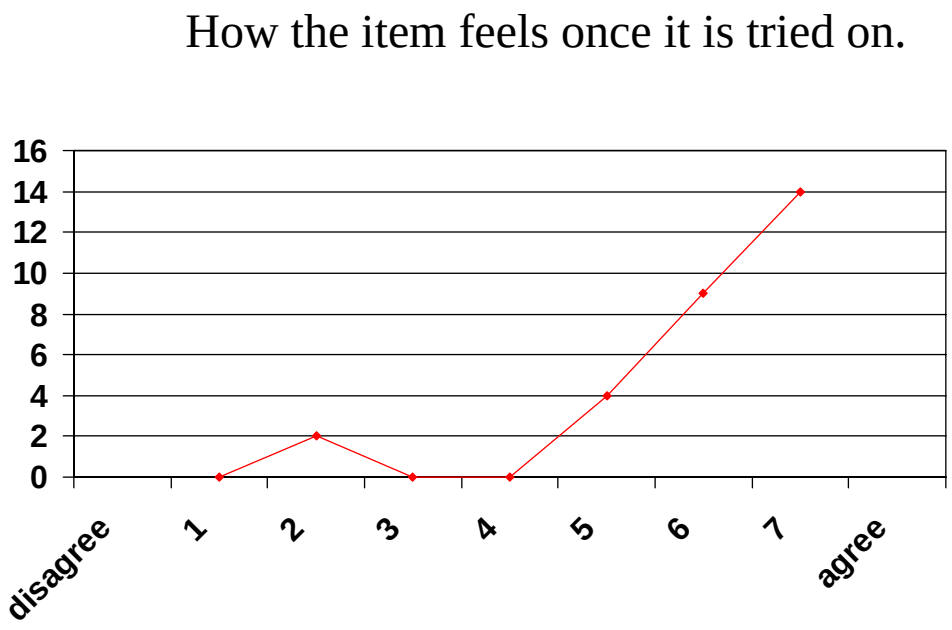


Figure 42 Comfort

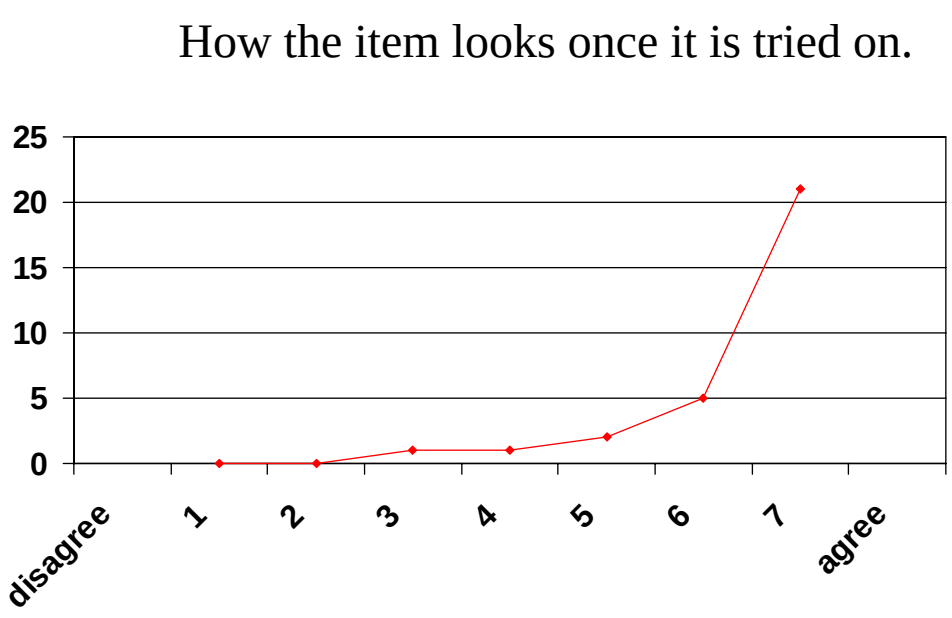


Figure 43 How the item looks once on.

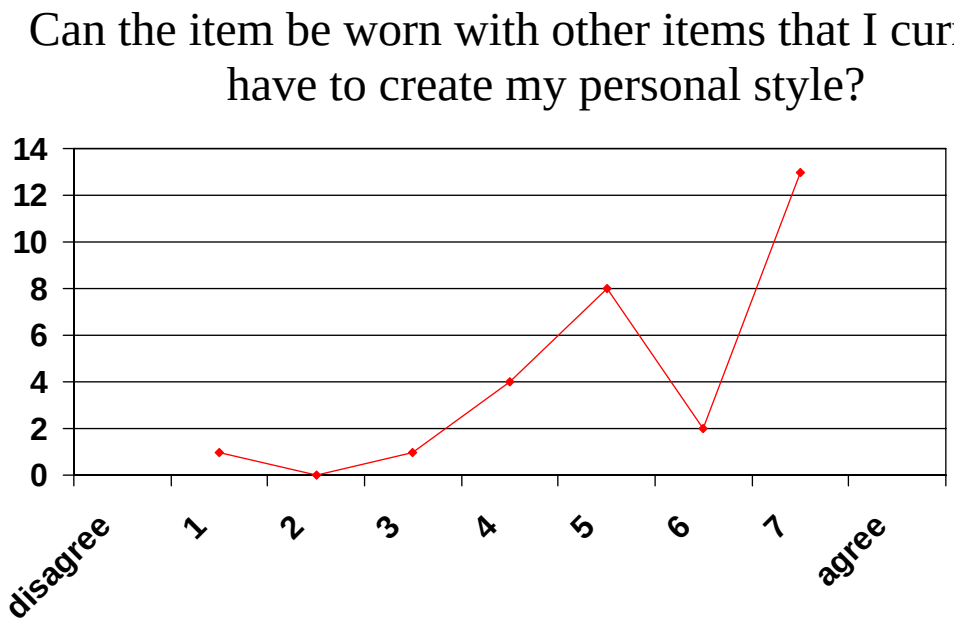


Figure 44 Create Personal Style

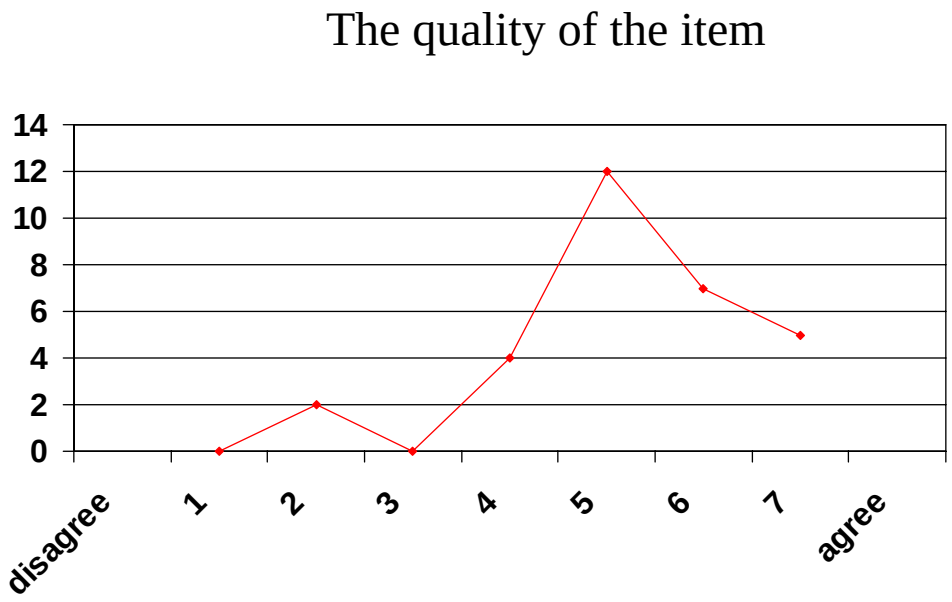


Figure 45 Quality

The period of time the item became fashionable.

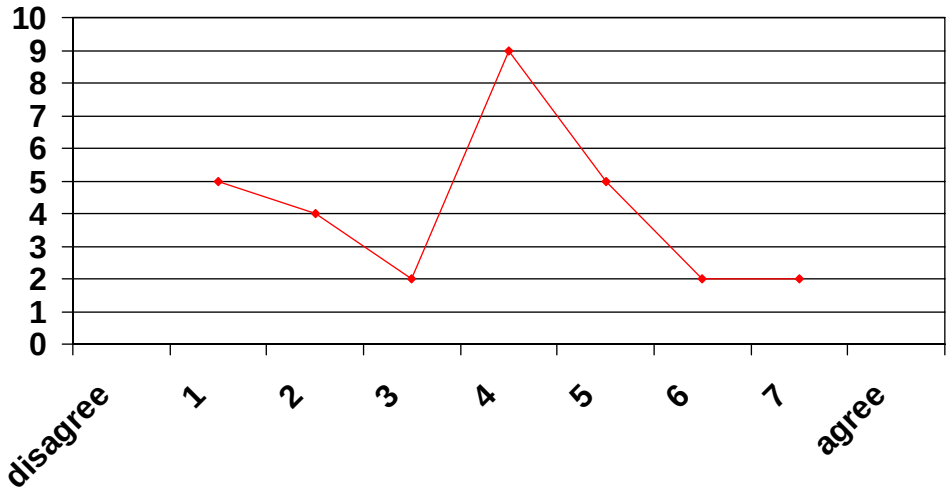


Figure 46 Period of time item became fashionable

Will this item make me positively stand apart from everyone else?

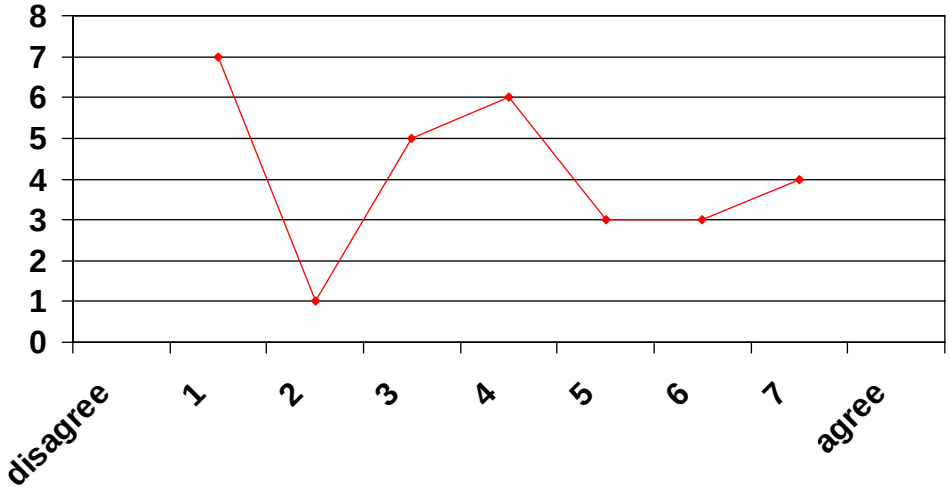


Figure 47 Standing Apart

How do you determine what shoes are in fashion?

(Fashion: The most general term and applies to any way of dressing, behaving, writing, or performing that is favored at any one time or place.)

- **Participants were able to choose more than one answer for this question.**
- For the section labeled OTHER participants gave a more personalized answer.

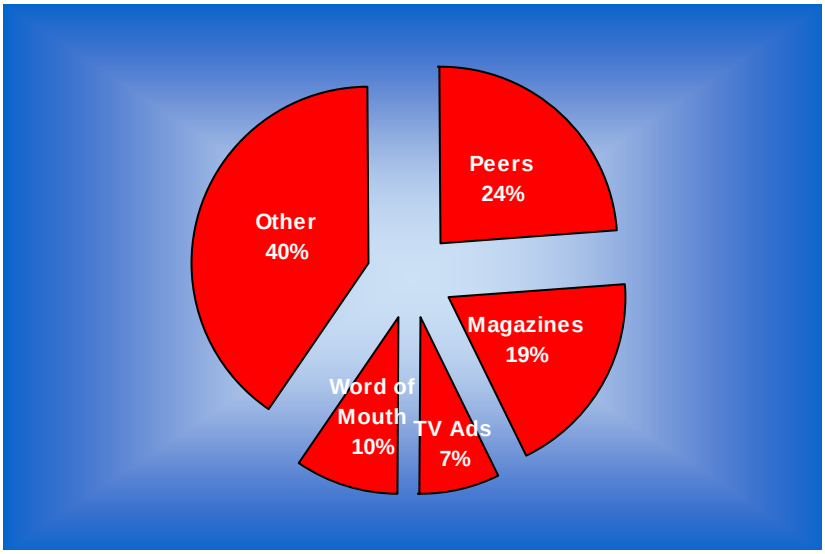


Figure 48 Determine Fashion

The participants' answers varied in each category of the survey. Overall the participants were aware of what they felt was fashionable and what they thought determined fashion. Since fashion is very personal, when the participants were allowed to explain any one of their particular answers most of the responses were along the lines of, " I wear what I like," "I wear what makes me feel comfortable," and " I wear what is in for that season," which proves that personalization is important in choosing an item of clothing.

The issues addressed were:

- The study of the fashion cycles so that the niche category of specialty shoes can be as current as mainstream fashionable shoes.
- More colors for individuals to express their personality.
- Different style options so that individuals can be dressed for different occasions and seasons.

Review of the entire process of Methodology:

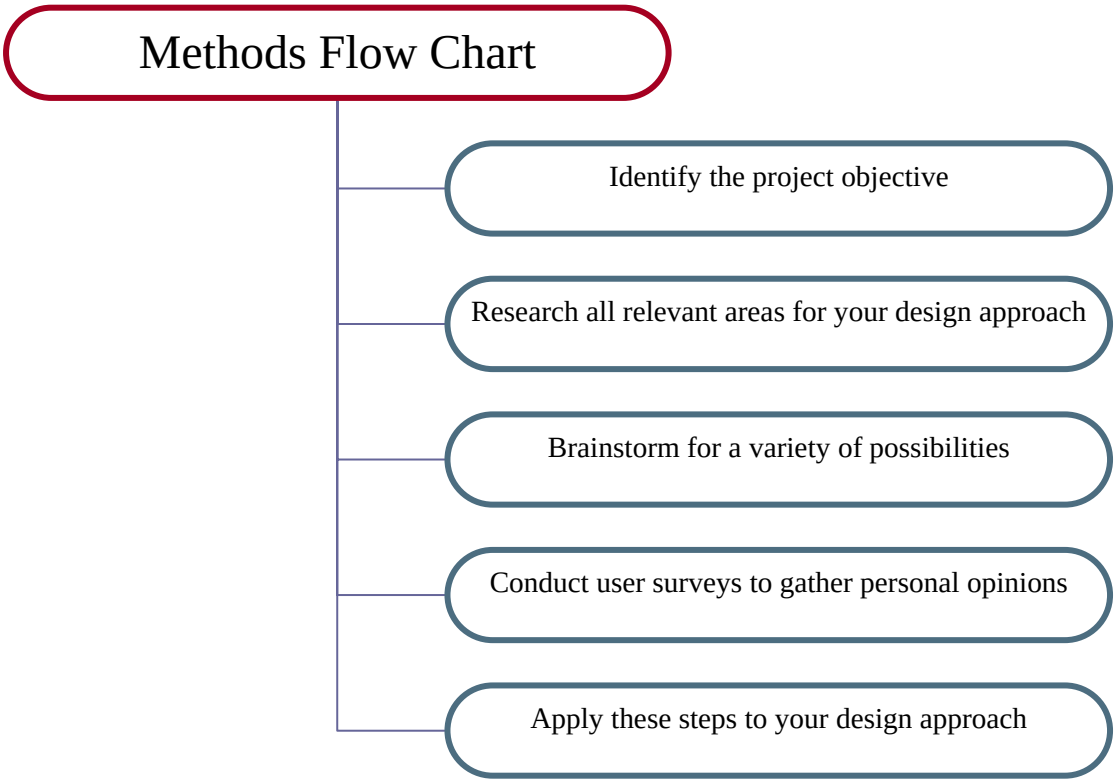


Table 6 Methods Flow Chart

CHAPTER 4: APPLICATION OF METHODOLOGY

4.1 INTRODUCTION

This chapter will feature the exploration of design concepts and explain the techniques and design system. Processes will describe, illustrate and document the systematic approach taken. The method and styles that are used were selected for multiple reasons including research, data analysis, knowledge and familiarity. However, there may be several design solutions and this method is not universal and can be modified to suit the designers' particular objectives and the customers' collective needs.

4.2 Step1: Fashion Forecasting

Using the fashion forecasting method presented previously in section 2.6.4 that analyzes previous fashion design styles and current design styles, it will be possible to develop a projected styled specialty shoe, with emphasis on understanding that the adaptation of the trends depends on the particular group, age, income, lifestyle, and fashion preferences. Searching for past and current trends can be done via the internet, because it contains recent information also via fashion magazines.

Shoes styles for 2004[5]

[5] pages 68-69 From www.google.com,Copyright,2006 Google

2004 Fashion interpretation consists of; flat shoes with a chic style, that are colorful and comfortable, low heel, some shoes include 1950's styles with patterns; these styles are in the limits requested by the users according to the survey conducted for this study.

Shoe styles for 2005

2005 Fashion interpretation consists of; style merging, blending of different genres of fashion to create a new style, example: the ballerina-tie-up sneaker, and broad color selections.

Shoes styles for 2006

2006 Fashion interpretation consists of; a combination of 2004 and 2005 styles with updated colors.

4.3 Step 2: Color Research

Colors studies should be conducted to be updated on the latest color trends. Pantone surveys the designers of New York Fashion Week to present to consumers the season's latest color trends.

Color Studies 2004-2006 [6]

[6] From www.pantone.com/fall2004 ,Copyright 2004, Pantone, Inc.

PANTONE® **FASHION COLOR REPORT** FALL 2005

Rattan	PANTONE 14-1031	C 10	M 15	Y 75	K 5
Gloxinia	PANTONE 19-3022	C 48	M 100	Y 0	K 35
Ruby Wine	PANTONE 19-1629	C 0	M 100	Y 65	K 55
Burnt Orange	PANTONE 16-1448	C 0	M 50	Y 100	K 7
American Beauty	PANTONE 19-1759	C 0	M 100	Y 100	K 25
Glazed Ginger	PANTONE 18-1154	C 0	M 50	Y 100	K 27
Moroccan Blue	PANTONE 19-4241	C 100	M 50	Y 20	K 40
Moss	PANTONE 16-0532	C 5	M 0	Y 100	K 35
Burnt Olive	PANTONE 18-0521	C 50	M 25	Y 100	K 45
Atmosphere	PANTONE 16-1406	C 0	M 7	Y 20	K 30

PANTONE Fashion Color Report Vol. 23, February 2005. Pantone, Inc., 590 Commerce Blvd., Carlstadt, NJ 07072-3098. Tel: 201.935.5500 Fax: 201.896.0242.

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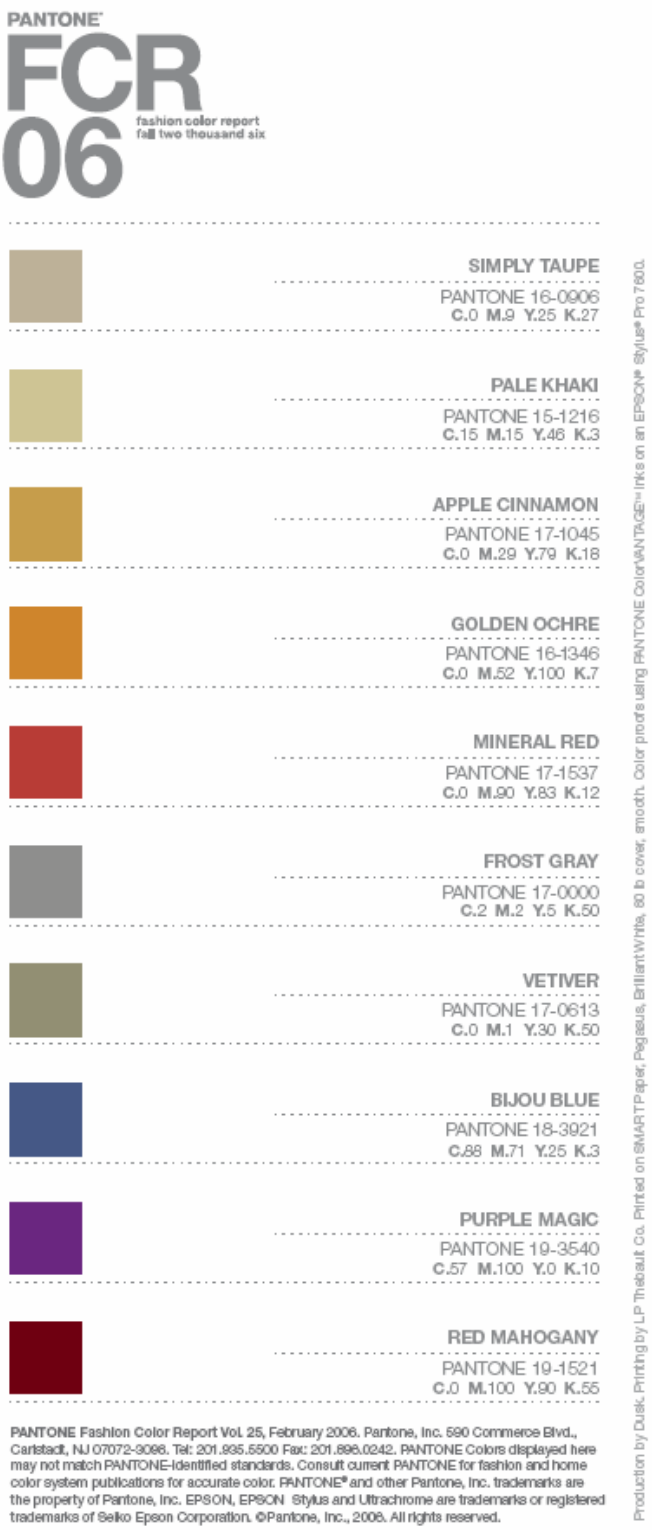
[7] From www.pantone.com/fall2005 ,Copyright 2005, Pantone Inc.



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[8] From www.pantone.com/fall2006 ,Copyright 2006, Pantone, Inc.

4.4 Step 3: Idea sketching and form development

These ideas are collected from my research reviews on fashion user surveys. After evaluations, the designer should take the best aspects of all concepts and merge them in to an effective solution. The final design is inspired from the classic Mary Jane style, applied with a more modern sole and the latest color trend.

Figure 49 Sketching

4.5 Step 4: 3D Computer prototype and hand model prototype

The designer can build a model with a 3D modeling software or a scaled model to acquire an idea of what the product will look like. The various colors are obtained from the color research for 2004-2006.

Figure 50 3D Model

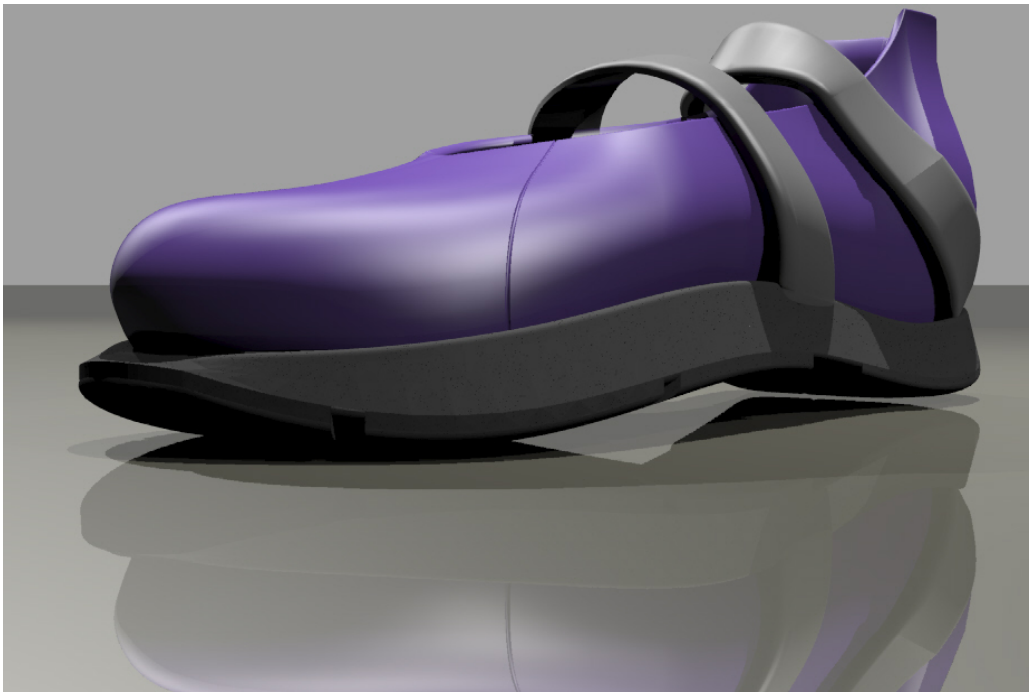


Figure 51 3D Model

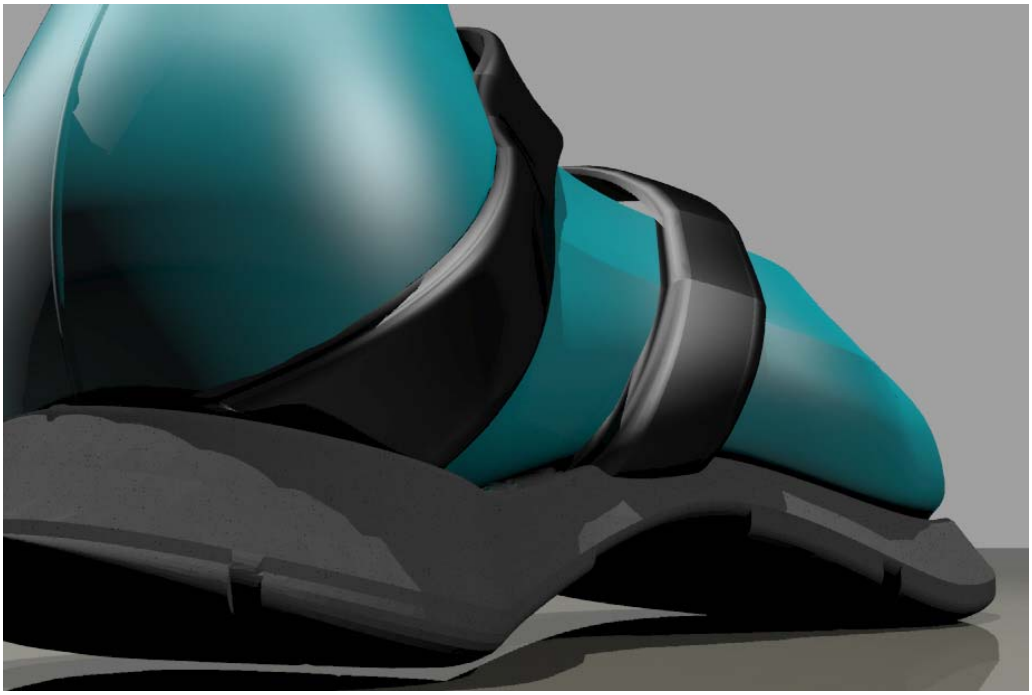


Figure 52 3D Model

Figure 53 3D Model

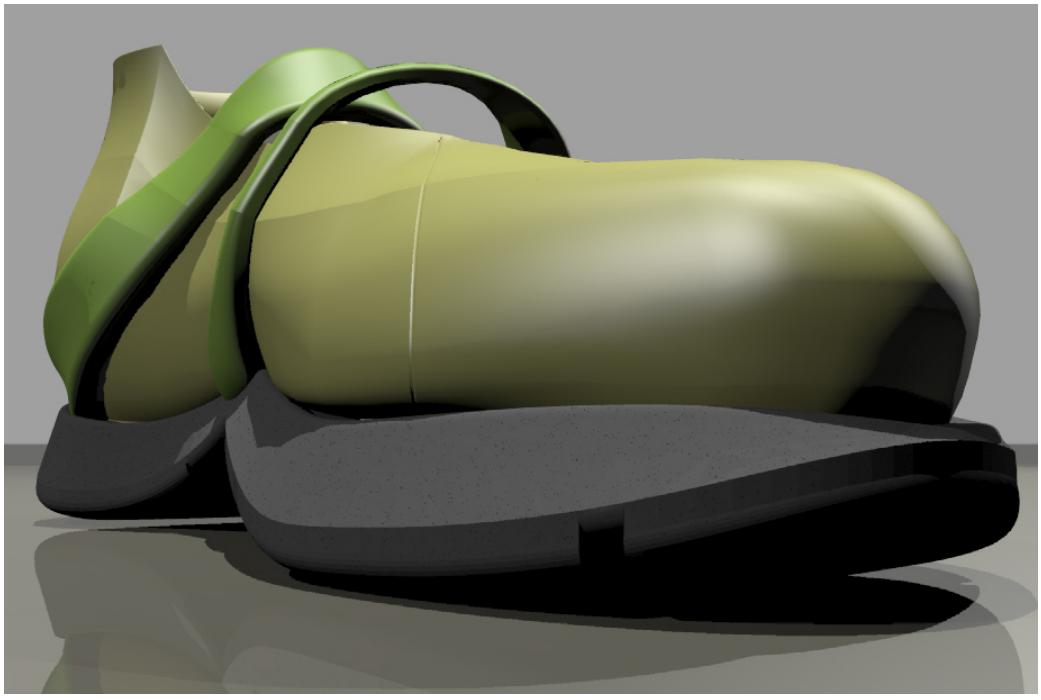


Figure 54 3D Model

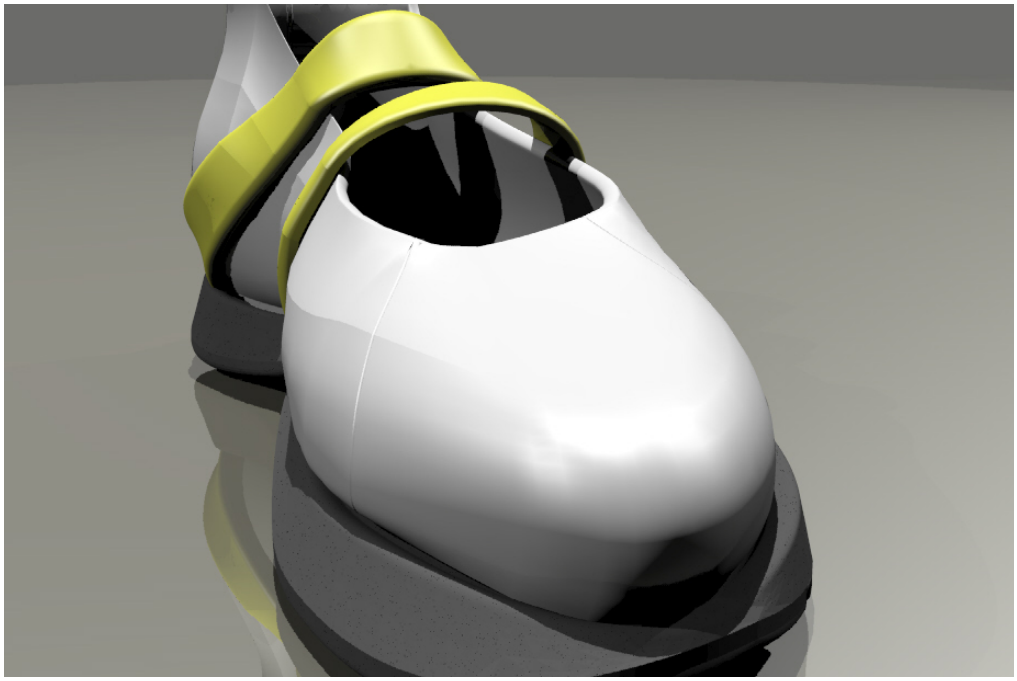


Figure 55 3D Model

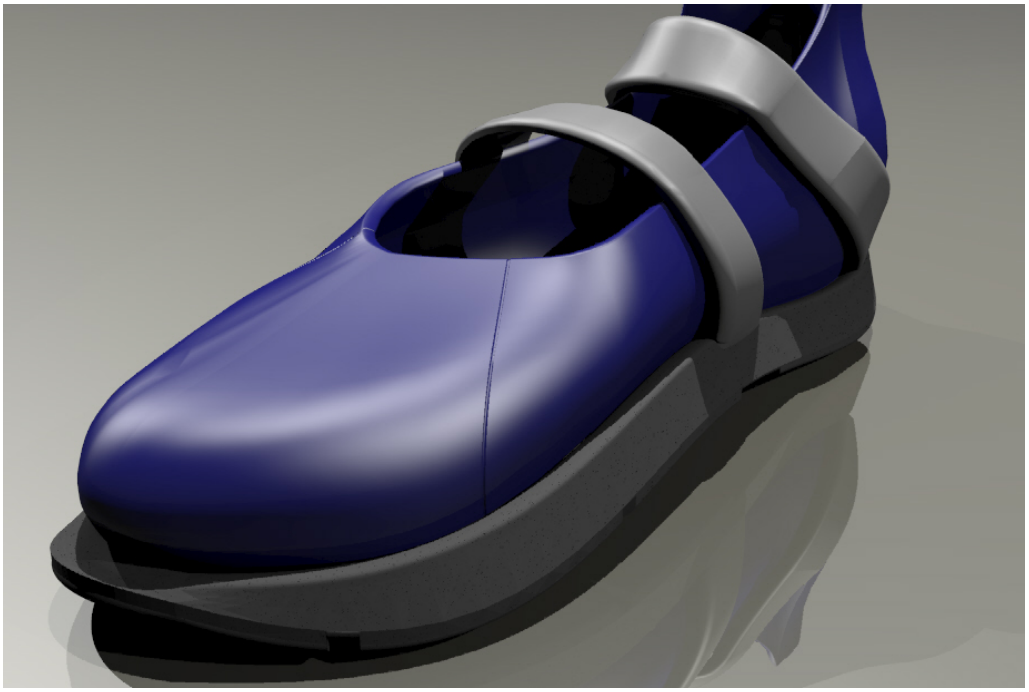


Figure 56 3D Model

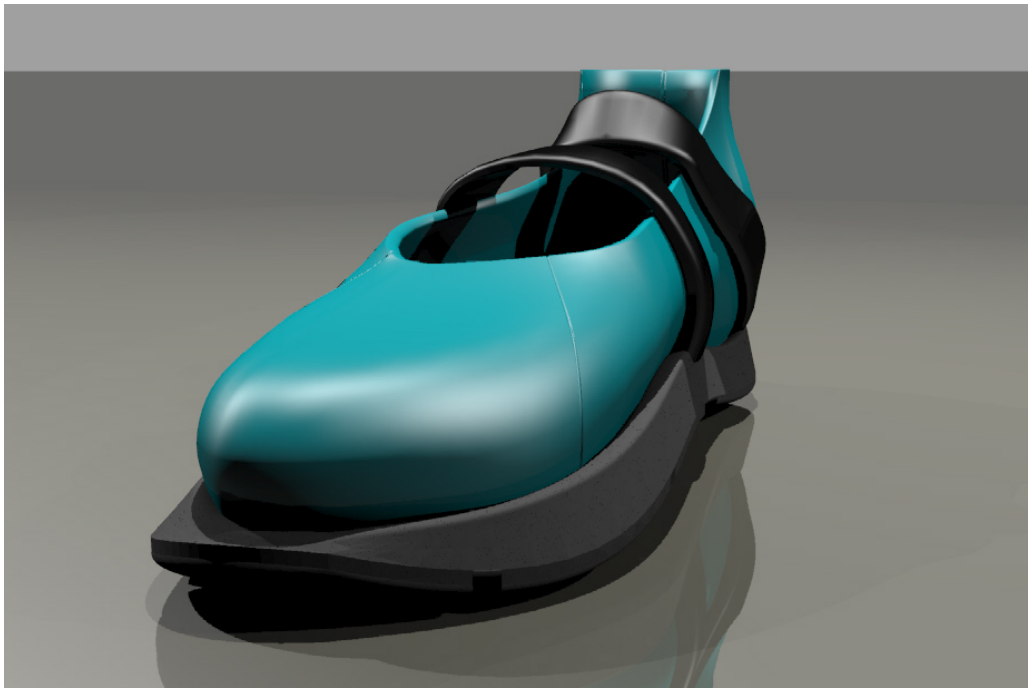


Figure 57 3D Model

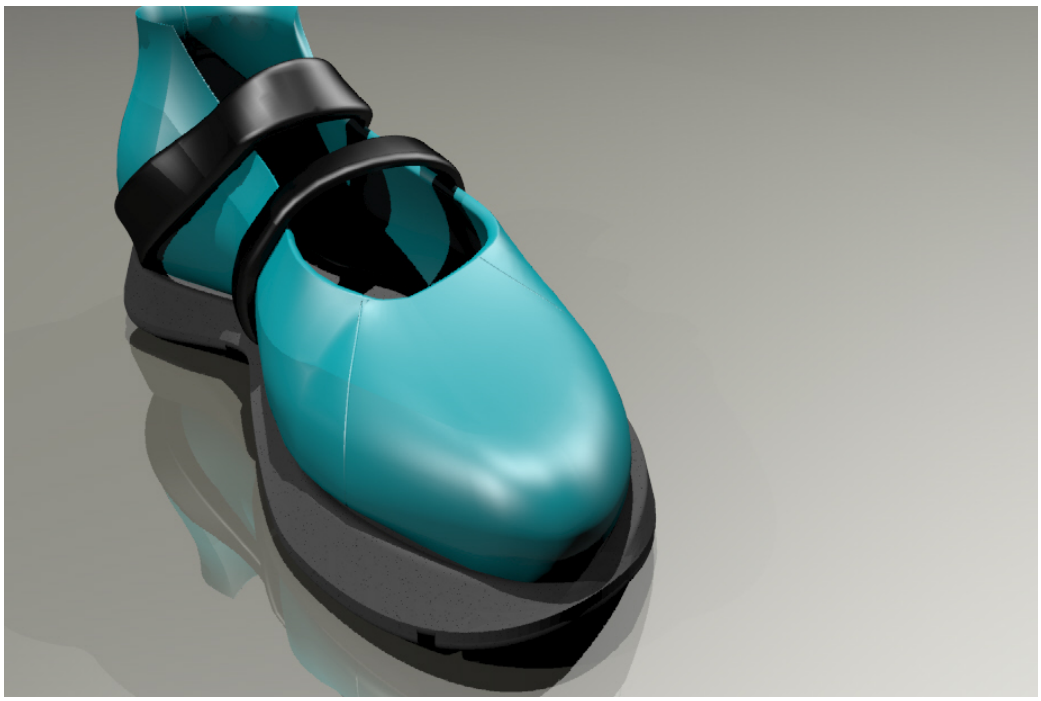


Figure 58 3D Model

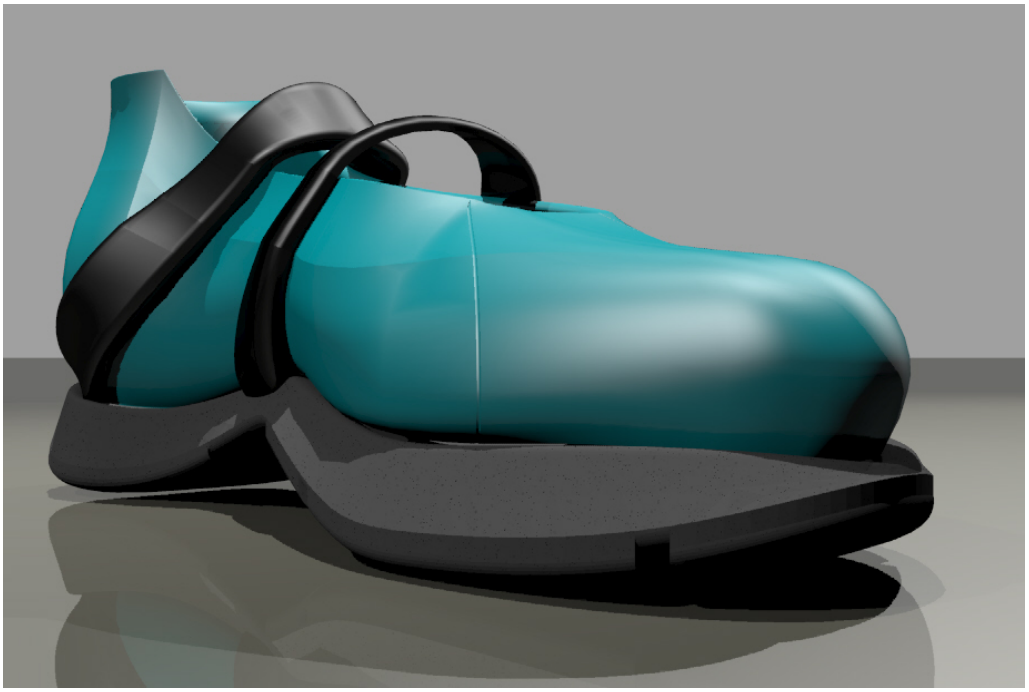


Figure 59 3D Model

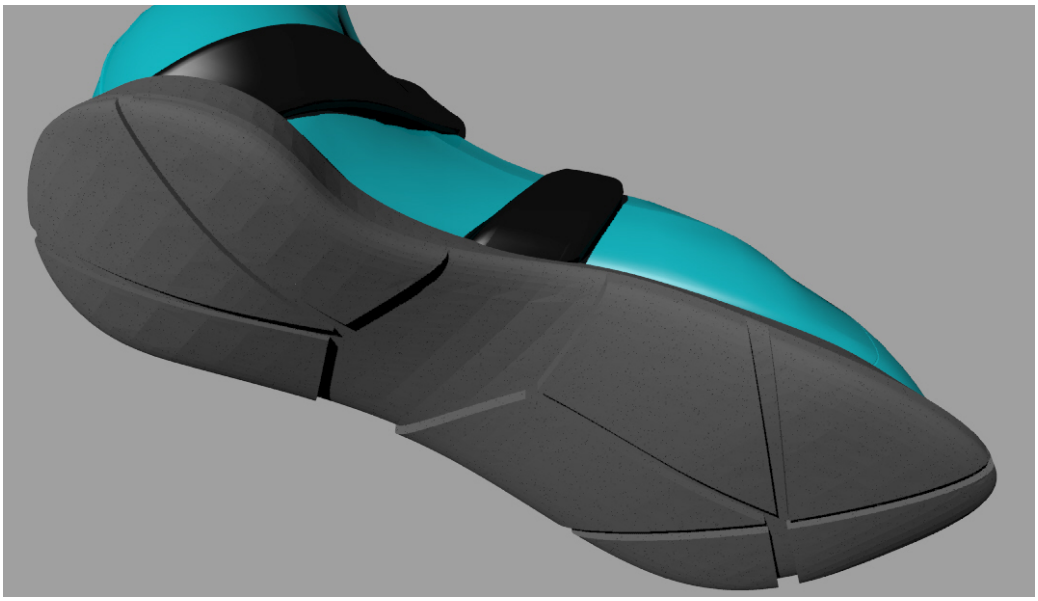


Figure 60 3D Model

Hand model prototype and fabrication processes

Materials used to construct the top part of this shoe are vinyl, cotton lining, and a tri comfort orthotic insert from Dr. Scholl's. The sole of the model was 3D printed. The sole design was inspired from a combination of the latest styles for 2006 by Nike; I choose Nike for inspiration because it is one of the largest shoe companies in the world and is very conventional.

Shoe pieces

Figure 61 Shoe Construction

Figure 62 Shoe Construction

Industrial sewing machined that was used to sew the vinyl.

Figure 63 Shoe Construction

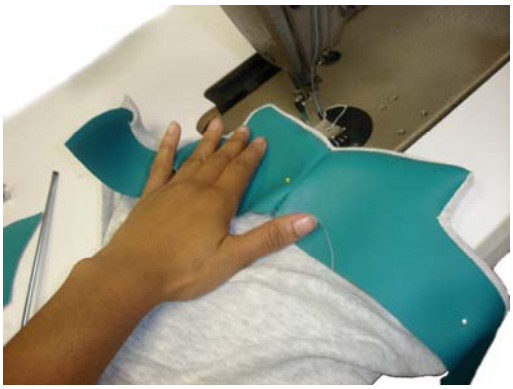


Figure 64 Shoe Construction

3D printed sole

Figure 65 Shoe Construction

Constructed Shoe

Figure 66 Shoe Construction

Figure 67 Shoe Construction

Figure 68 Shoe Construction

Figure 69 Shoe Construction

Figure 70 Shoe Construction

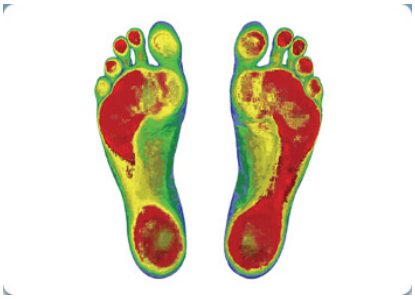
Figure 71 Shoe Construction

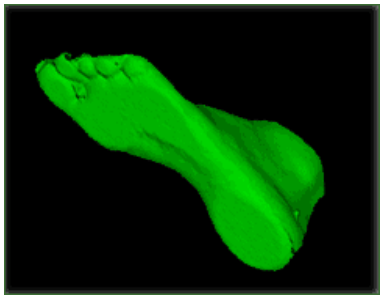
4.6 Further Development

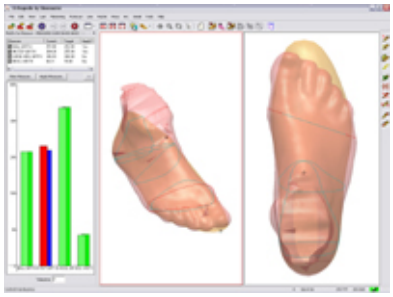
Foot Scanning Digital Catalog

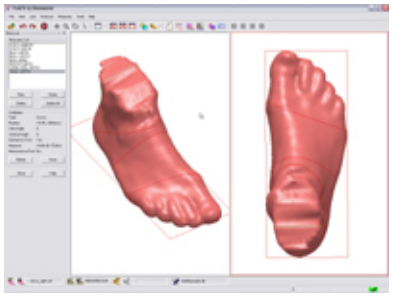
Combined with the foot scanner is a digital touch screen, the scanner and the touch screen work in sequence to supply suggestions for the particular foot problem and the latest fashion trends and colors.

Samples of foot scanning photos[9]









[9] From www.google.com , Copyright, 2006, Google

CHAPTER 5: CONCLUSIONS

5.1 SUMMARY OF STUDY

Chapter one set the foundation for this documentation. After stating the problem and the needs for this study, I outlined the objectives and goals anticipated and the methods of how I would accomplish them.

Chapter two, the review of literature examined issues associated with and relevant to understanding the current state of specialty shoes. Understanding the role of orthopedic shoes, features of orthopedics, the definition of orthotics, the current market, self-image and clothing, and defining fashion helped place the research into perspective.

Chapter three describes the research in profundity and narrows the research down for precision. It discussed all areas considered for designing for a person who has to wear aesthetically unappealing specialty shoes. It discussed an acknowledgment of the foot, as it is important to understand how the foot functions and the possible common foot problems, the clinical examination after pain is reported, and the characteristics of a normal foot. Understanding the mental state of a person prescribed to wear specialty shoes was studied to better understand how one may feel once they are diagnosed with a disability. Fashion, the main objective for improving unattractive specialty shoes, was analyzed to get direction on how to approach the aesthetic problem. Color, playing an important role in personalization,

was also analyzed to see how it could be used to enhance the appearance of specialty shoes.

Chapter four documents the methods and guidelines for this study and also the steps for prospective designers. It includes user surveys and results which were conducted to get personal opinions of consumers and direction for designing an improved specialty shoe and implications of the methods and the design processes used for improvement of specialty shoes.

5.2 RECOMMENDATIONS

Due to the lack of fashion varieties in specialty shoes, I believe that others can use this documentation as a guide. I have laid the foundation for developing a process to design for those with orthopedic problems; however, it will ultimately be up to the individual designer to incorporate his/her own method in their approach; the same can be said for the final design and fabrication processes of this product.

Taking this into consideration, an in-depth market study is necessary for the development of any product due to ever-changing fashions. Future trends can be identified and predicted. However, trends change rapidly and can be rendered obsolete the moment research is published. Incorporating a survey to help understand the user and the market is important. However it is important to realize that surveys produce opinions and not always facts.

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